

June 30, 1925.

1,544,323

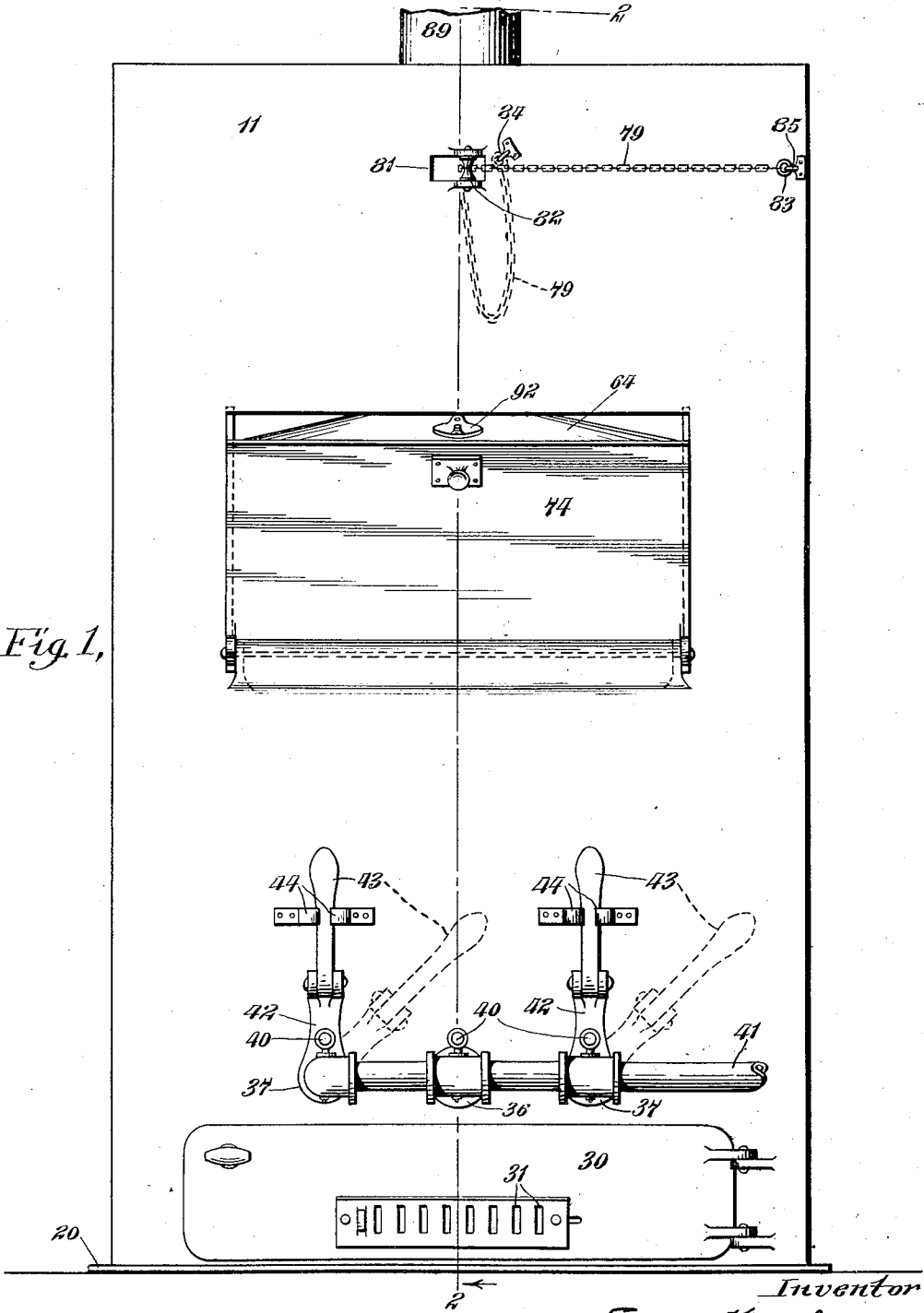
E. KENER, JR

INCINERATOR

Filed Aug. 27, 1921

4 Sheets-Sheet 1

Fig. 1,



Inventor
Edward Kener Jr
by *Geary & Pohl*
Attorneys.

June 30, 1925.

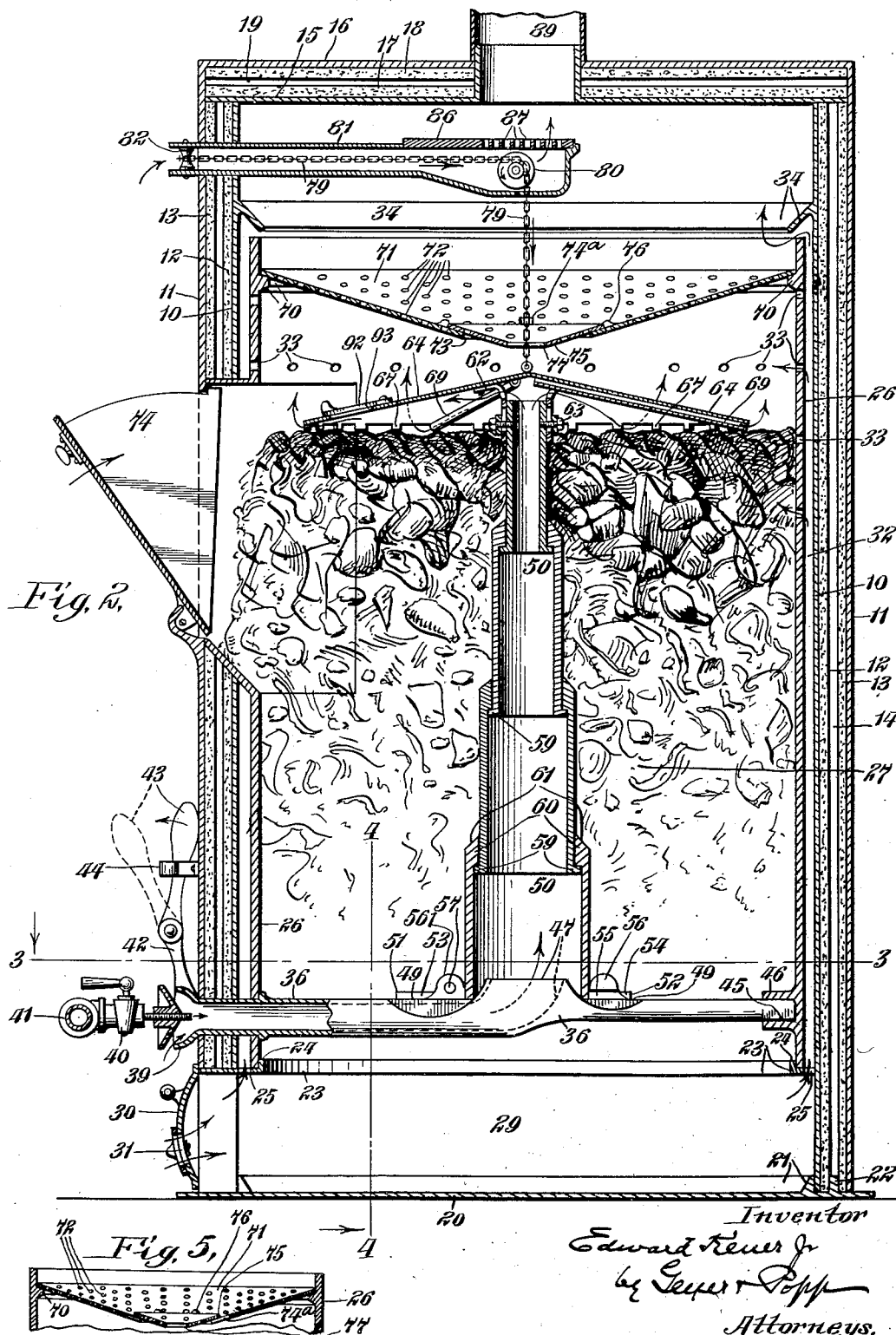
1,544,323

E. KENER, JR

INCINERATOR

Filed Aug. 27, 1921

4 Sheets-Sheet 2



June 30, 1925.

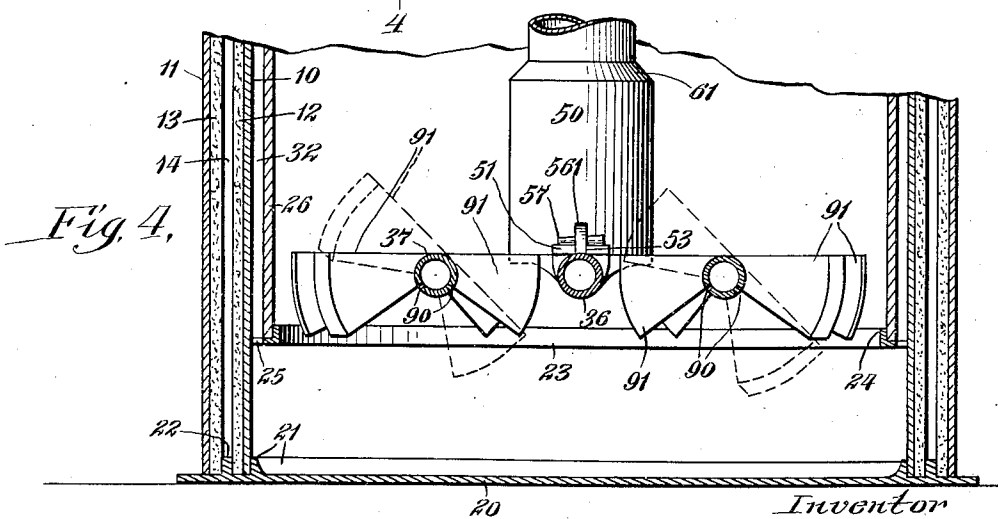
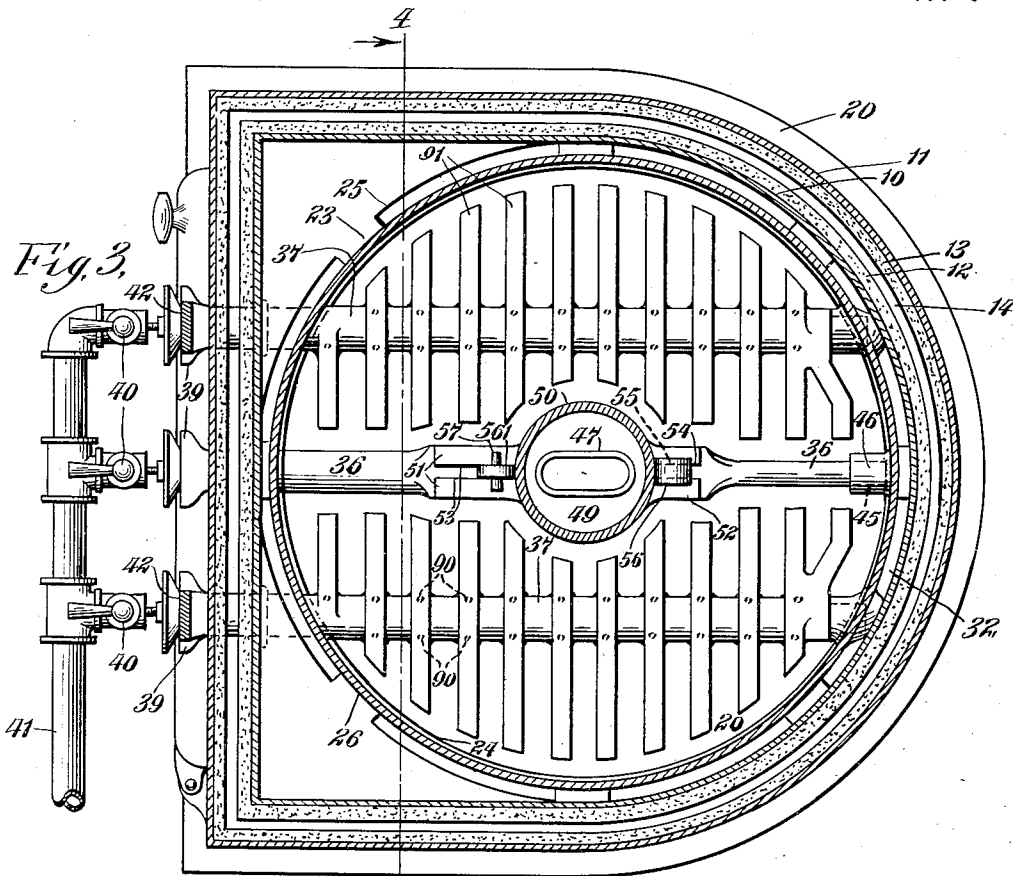
1,544,323

E. KENER, JR

INCINERATOR

Filed Aug. 27, 1921

4 Sheets-Sheet 3



Inventor
Edward Kener Jr
by *Levy & Papp*
Attorneys,

June 30, 1925.

1,544,323

E. KENER, JR

INCINERATOR

Filed Aug. 27, 1921

4 Sheets-Sheet 4

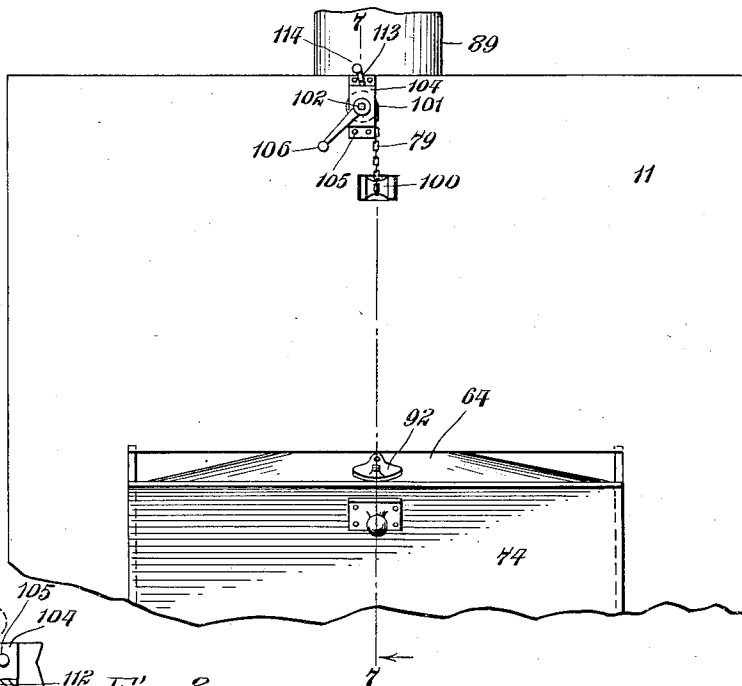


Fig. 6,

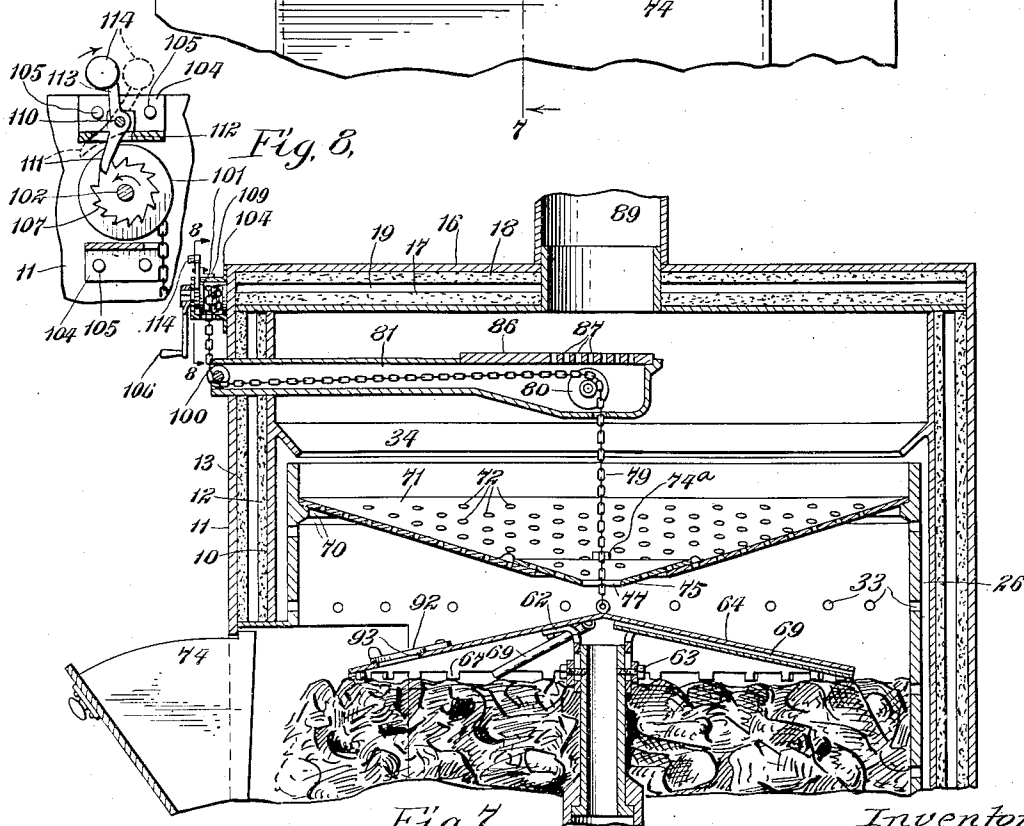


Fig. 7,

Inventor
Edward Kener Jr
by Eyer & Pope
Attorneys

Patented June 30, 1925.

1,544,323

UNITED STATES PATENT OFFICE.

EDWARD KENER, JR., OF BUFFALO, NEW YORK.

INCINERATOR.

Application filed August 27, 1921. Serial No. 496,043.

To all whom it may concern:

Be it known that I, EDWARD KENER, JR., a citizen of the United States, residing in Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Incinerators, of which the following is a specification.

This invention relates to a sanitary means of disposing of garbage, old papers and other refuse by means of burning the same.

The object of the invention is to provide a convenient gas burning household incinerator in which the refuse is heated at the upper surface thereof, so as to not necessitate the heating of the entire mass of refuse before combustion is enable to commence. A further object of the invention is to produce an incinerator which is not liable to the danger of explosion by reason of the gas flame becoming extinguished, which reduces loss of efficiency by radiation to a minimum, which automatically keeps the gas burning at the most efficient part of the body of refuse, while the latter is being slowly consumed, which is readily demountable, and in which the operating parts are not likely to burn out or become clogged.

In the accompanying drawings:

Figure 1 is a front elevation of the complete incinerator. Figure 2 is a vertical section thereof taken on line 2—2, Fig. 1. Figure 3 is a horizontal section taken on line 3—3, Fig. 2. Figure 4 is a fragmentary vertical section through the lower part of the incinerator, taken on lines 4—4, Figs. 2 and 3. Figure 5 is a detail vertical transverse section through the diffusing plate and filler plate. Figure 6 is a fragmentary front elevation of a modified form of incinerator. Figure 7 is a vertical section thereof taken on line 7—7, Fig. 6. Figure 8 is a detail of the modified lifting mechanism taken on line 8—8, Fig. 7.

Similar characters of reference refer to like parts throughout the several views.

In its general organization, this incinerator comprises a main vertical combustion chamber which is adapted to receive the refuse to be burned, the latter being supported on a number of oscillatory, hollow grate bars which are supplied at their outer front ends with combustible gas so that said refuse may be heated at its lower part. Said refuse is furthermore heated by burning gas at its upper part by means of a

vertically movable burner plate which automatically descends as the refuse is consumed and whose lower face is suitably provided with gas through a vertical telescopic gas pipe communicating with a central stationary hollow grate bar. The side grate bars may be shaken by suitable handles arranged at the front part of the incinerator. Air from the ash pit travels upwardly between the inner heated wall and the outer insulating wall of the incinerator, thereby not only furnishing the combustion chamber with heated air, but, in addition, insulating the high temperature zone and also preventing the inner heated walls from burning out.

The main body or insulating walls of the incinerator preferably consist of the outer vertical plates 10 and 11, which are provided on their inner surfaces with insulating asbestos sheets 12 and 13 that are separated preferably by a dead air pocket or space 14. Similarly, the roof of the incinerator consists preferably of horizontal plates 15 and 16 and lined with insulating asbestos sheets 17 and 18 which are separated by a dead insulating air space 19. The whole body rests upon the usual horizontal floor or base plate 20 which is provided with suitable upper flanges 21 and 22 for retaining the different vertical walls and insulating sheets in proper position relative to each other.

Secured to the inner lower face of the inner wall 10 is a laterally projecting annular supporting shelf 23 preferably provided at its inner side with an upwardly extending flange 24 and further provided with a number of arcuate air apertures 25 disposed outside of said flange 24 and adjacent to the inner wall 10. Supported by said lateral shelf 23 and disposed in spaced relation to the inner wall 10, is a heated wall 26 which forms the main combustion or incinerating chamber in which the refuse 27 is adapted to be consumed. Beneath the combustion chamber is arranged the usual ash pit 29 to which access is gained by the customary hinged ash door 30, which is provided with the adjustable air inlet slits 31 which permit the necessary air for combustion to flow into said ash pit. Some of this air is permitted to travel upwardly through the aforesaid air apertures 25 and thence through an annular passageway 32 which is situated between the heated wall 26 and the inner plate 10 of the outer insulating wall. From this passageway the

air flows out horizontally and inwardly over the upper surface of the burning refuse 27 through the air diluting holes 33. Also some of this air continues upwardly in the said annular passageway 32 and emerges from the upper end thereof, and impinges against the lower, downwardly inclined face of an annular deflecting plate 34. In both cases, the air in the said passageway acts in two capacities as it flows upwardly, that is, it is heated by contact with the wall 26 so as to readily combine with and thereby completely oxydize any partially oxydized gases (such as carbon monoxide) or any rising solid material in the combustion chamber (such as soot). Also this heating of the rising air currents in passage way 32 causes the inner heated wall 26 to be sufficiently cooled down as to be not liable to be burned out or melted by the high temperatures existing within the combustion chamber. In addition to this, the rising current of cool air also largely prevents radiation from the said inner heated wall 26 out to the inner insulating plate 10.

Pivotaly mounted in the lower part of the inner, heated wall 26 is a horizontal central stationary grate bar 36 and a pair of horizontal oscillatory grate bars 37, 37 disposed parallel to and on each side of said central stationary grate bar. All of these grate bars are hollow and are provided at their forward end with bell shaped air inlets 39 and suitable gas control valves 40 which control the flow of gas from a main supply gas pipe 41 into the several air inlets 39. The outer or oscillatory grate bars 37 are provided at their forward ends with upwardly extending arms 42 to whose upper, bifurcated ends are pivoted shaker handles 43 each of which is pivoted relatively to said arms 42, in a plane which passes through the longitudinal axis of its companion oscillatory grate bar. In ordinary practice, there is a tendency for these handles to drop forwardly and project inconveniently into the room. This fact has been made use of beneficially in this improved incinerator, by providing a means whereby each of said handles is positively held back properly against the wall of the incinerator, when and when only, the companion oscillatory grate bar is in a definite and most desirable position. This beneficial result is obtained by means of a pair of spring brackets 44 which are suitably secured to the front face of the outer incinerator wall 11 adjacent to each shaker handle 43 and are adapted to resiliently seize opposite sides of the shank of each of said shaker handles when the same has been first moved laterally into alignment with the space intermediate of the jaws of said resilient brackets 44 and then manually forced rearwardly between

said jaws and resiliently engaged behind the same in the position shown by full lines in the drawings. Thus, not only is each of said shaker handles held positively rearwardly out of the way but in addition the companion oscillatory grate bar is held in its proper centralized position when at rest, i. e., at the conclusion of the shaking operation.

The central stationary grate bar 36 has its rear end reduced somewhat in diameter and is provided at its extreme rear end with a horizontal lower flattened seat 45. This extreme rear end of said stationary grate bar is received within the bore of a suitable socket 46, the lower face of whose bore is suitably flattened to accommodate the aforesaid flattened seat 45. The forward hollow part or bore of said stationary grate bar opens centrally and upwardly into a combustion opening 47. Adjacent to and on both sides of said opening, the stationary grate bar is provided with a flattened upper face 49 upon which detachably rests a telescopic gas pipe 50, the lowermost and largest section of which is provided with a forwardly extending horizontal flange 51 and a rearwardly extending horizontal flange 52, in which are formed respectively the front and rear diametrical slots 53 and 54, as best shown in Figs. 2 and 3. The rear slot 54 embraces the opposite sides of a shank 55 which is formed on and extends upwardly from the upper face of the said stationary grate bar 36. The upper end of said shank is enlarged to form a retaining head 56 whose lower face bears downwardly against the upper face of the rear gas pipe flange 52. Received within the forward slot 53 of the front horizontal flange 51 is an upwardly extending detaining lug 561 provided with a suitable hole to receive a removable transverse securing pin 57. By this construction, the lower telescopic gas pipe section may be readily removed from the stationary grate bar 36 by merely first removing the pin 57, then lifting the front flange 51 and sliding said lower telescopic gas pipe section forwardly out of engagement with the retaining head 56.

Said telescopic gas pipe is composed of a number of vertical, coaxially arranged sections of diminishing size, each of which is provided at its lower outer end with a peripheral flange 59 and provided at its upper inner end with an inner annular flange 60. Furthermore, the upper peripheral corner of each pipe section is suitably beveled at 61 for the purpose of deflecting the refuse 27 away from the joints between companion pipe sections.

To the upper end of the uppermost telescopic gas pipe section are adjustably secured a number of supporting L-shaped brackets 62, each of which is provided with a vertical slot to permit vertical movement

of said bracket relatively to said gas pipe section and is adapted to be secured in place by a suitable cap screw 63. To the upper arms of said brackets is secured a conical upwardly tapering burner plate 64, whose lower or concave side is spaced some distance above the upper end of the uppermost gas pipe section, so as to permit a flow of gas from said pipe section to the whole under face of said burner plate. The latter is adapted to at all times, rest upon the upper surface of the refuse so that the only contact between said plate and the refuse is at the peripheral edge of said plate. It is at this same peripheral edge also that the gas at the under surface of said burner plate comes into contact with the air in the combustion chamber and is thereby enabled to burn with a gas flame in the usual way. This burning occurs upon the upper surface of the refuse and for this reason the combustion of the same is continuous and regular by reason of the fact that only the uppermost strata of refuse need be dried out, and these strata thereby brought to the point of sufficient dryness for self combustion before the lower strata need be also dried out or otherwise effected.

It is assumed that for ordinary use, the only gas which is to be lit or ignited is that at the periphery of said burner plate, the gas in the oscillatory grate bars 37 being only ignited when it is desired to heat the lower body of refuse, which condition occurs under unusual circumstances, such for instance, as when the refuse consists largely of very large pieces of material having a very high water content such as watermelon rinds. The burning of the refuse from the upper surface downwardly which is the normal condition has another important advantage in that while the refuse is drying (previous to the time when it begins to oxydize rapidly) it, of course, gives off both combustible gases and obnoxious fumes. In this improved incinerator, these combustible gases are ignited and thereby utilized in the upper part of the incinerator chamber and the obnoxious gases are forced to pass through the flame area at the periphery of the burner plate and thereby become chemically disintegrated into solid matter, combustible gases which are instantly consumed and also some final gases of combustion like carbon dioxide which are odorless and not poisonous and no more obnoxious than the ordinary gases emanating from a coal or oil burning boiler or gas stove which gases largely consist of carbon dioxide.

To ensure that a sufficient space intervenes between the periphery of the burner plate and the upper surface of the refuse, a number of depending, spacing lugs 67 are formed on the periphery of said burner plate. Safety means are also provided for

absolutely ensuring that the gas in the upper, gas-pipe section will at all times have a clear pathway to the combustion chamber. This is accomplished by the use of a number of gas conducting tubes 69 which are secured to the lower tapered face of the burner plate, their inner open ends being disposed over the upper end of the upper, telescopic gas pipe section while their outer open ends are disposed at the periphery of said burner plate.

Arranged above the burner plate and resting upon a suitable annular flange 70, formed on the upper bore of the inner heated wall 26, is a stationary downwardly tapering diffusing plate 71 which is provided with a plurality of perforations 72. The central or lower part of said diffusing plate is cut out to form a large clean-out hole 73, to which access is gained by opening the main refuse filling door 74 to the position shown in full lines in the drawings and which is suitably hinged to the front wall of the incinerator. Formed in the periphery of this clean-out hole 73 is a pair of diametrical outwardly extending removal notches 74^a. Removably resting upon the lower part of the upper concave face of the diffusing plate, is a circular covering plate 75 which is preferably downwardly tapered similarly to said diffusing plate and is centrally caused to be located in its proper central position thereon by means of a number of upstanding placement lugs 76 formed integrally upon said diffusing plate and adapted to bear against the peripheral edge of said covering plate 75. When it is desired to remove the latter, for cleaning purposes, it is merely necessary to lift the same, then tilt on one edge and remove downwardly through the aforesaid removal notches 74^a. Centrally the said covering plate 75 is provided with a hole 77.

Passing vertically through said hole is a vertical elevating chain 79 whose lower end is suitably secured centrally to the burner plate 64 and whose upper end passes around a suitable pulley wheel 80. The latter is arranged within and journaled in a horizontal air tube 81 which is suitably secured to the upper part of the main walls 10 and 11 of the incinerator and opens at its forward end into the outer atmosphere. The elevating chain 79 after passing around the rear pulley wheel 80 runs horizontally forwardly and passes around a forward pulley wheel 82 and terminates in a suitable securing ring 83 which may either be hooked to a central hook 84 when it is desired to allow the burner plate 64 to freely descend (as the upper surface of the refuse automatically is lowered by burning), or said ring 83 may be secured to an outer hook 85 when it is desired to hold said burner plate in its elevated position when, for example,

fresh refuse is being fed into the incinerator through the main filling door 74.

The upper part of the rear or inner end of said air tube 81 is removably covered by an air diffusing lid 86 which is perforated by a number of air orifices 87. This construction permits pure air to be drawn in through the air tube 81 and distributed in diffused streams into the hot flue gases which pass up a smoke pipe 89, such diffusion being in accordance with the best established practice in present day incinerators. An additional advantage gained by this particular construction however is that the horizontal portion of the elevating chain 79 (which would ordinarily be the first to burn out) is located right in the midst of the stream of cool air which flows through the air tube and thus is effectually cooled and prevented from burning out.

Each of the outer or oscillatory hollow grate bars 37 is provided on each of its lower longitudinal sides with a longitudinal row of gas apertures 90 preferably spaced at regular intervals. Disposed above each and every gas aperture 90, and secured integrally to the main body of the companion oscillatory grate bar 37 is a laterally extending supporting arm 91 whose upper face is preferably substantially horizontal (when the grate bar is in its central position, as shown). The lower face or edge however of each lateral supporting arm 91 is inclined and extends downwardly and laterally outwardly away from its companion gas aperture 90. By this construction, the liquids of condensation which fall on the grate bars, are drained down and away from the gas aperture 90, the liquid being thereby caused to drip from the lower outer corners of said supporting arms.

In operation, the refuse which is to be destroyed in an inoffensive manner, is fed into the incinerator through the main filling door 74, after the burner plate 64 has been sufficiently elevated by means of the lifting chain 79, whose securing ring 83 may, if desired, be temporarily slipped over the outer securing hook 85 during this filling operation. The central gas valve 40 is then turned on and the lighting door 92 is pushed to one side thereby exposing the lighting aperture 93, by which means the gas under the burner plate 64 may be lighted readily and the lighting door 92 again swung back into place. As the garbage or refuse is gradually consumed, the upper surface of the same lowers and, with it, the burner plate 64. The vertical relative distance between the upper section of the telescopic gas pipe 50 and the burner plate is adjustable by reason of set screws 63. The gas is prevented from becoming extinguished by reason of a number of gas conducting tubes 69. If it is desired to burn the refuse from the bottom also, the

outer gas valves 40 are turned on and the gas in the oscillatory grate bars 37 ignited. If desired for any reason whatsoever the telescopic gas pipe 50 may be readily detached from the central stationary grate bar 36 by merely removing the pin 57. To remove the hand-hole, cover-plate 75, the same need be merely tipped up and removed downwardly through the removal notches 74^a.

This incinerator disposes of refuse without any odorously objectionable gases being present even in the smoke pipe thereof. It utilizes to the full the economical and efficient ability of the refuse to aid in its own destruction when properly dried out and ignited. It rather cannily compensates for mechanical defects or laziness in human nature by insisting that the human operator must either have the oscillatory grate bars 37 in their proper position or else suffer the aesthetic and otherwise uncomfortable projection of the shaker handles 43 out into the room. It is impossible to burn out the elevating chain 79 because its horizontal part is always air cooled and its vertical part some distance away from the flaming gas (which burns under at the periphery of the burner plate). At the same time this cooling of the horizontal portion of said lifting chain 79 involves a construction which is used for the additional purpose of feeding diluted pure air into the combustion chamber adjacent to the smoke pipe 89 thereof. Pure air is also fed into said combustion chamber from the air chamber 32 through a number of air outlet holes 33 which are disposed in vertical, as well as horizontal rows, so that fresh pure air is always present in the zone of combustion irrespective of the amount of refuse in the incinerator.

A modified means of controlling and lifting the burner plate 64 is shown in Figs. 6, 7 and 8. In this case as before, the elevating chain 79 has its lower end secured to the central, upper part of said burner plate and passes vertically upwardly around a pulley 80 and thence horizontally forwardly within the bore of the air tube 81. Emerging from the front open end of said air tube, said elevating chain passes around a pulley 100 which in this modified construction rotates about a horizontal axis. The said elevating chain then passes vertically upwardly again in proximity to the front outer face of the incinerator, and has its extreme upper end secured to the hub of a capstan drum 101 which is suitably secured to a capstan shaft 102. The rear end of said capstan shaft is suitably journaled in the front face of the incinerator, while the forward end of said shaft is suitably rotatably supported in a bearing bracket or two legged cleat 104 which is likewise secured to the front face of the incinerator by rivets 105 or other-

wise. Secured to the extreme forward end of said capstan shaft 102 is a crank handle 106 which is adapted to be manually turned in the one direction or the other for either raising or lowering of the burner plate 64 as may be desired. For the purpose of positively holding the burner plate in an elevated position when desired, a ratchet wheel 107 is arranged on and secured to the capstan shaft and disposed between the rear face of the cleat 104 and the front or outer end of the capstan drum 101. Secured to the upper face of the cleat 104 is a small bracket or angle iron 109 to whose outer vertical face is pivoted at 110 a ratchet dog 111 whose lower arm is adapted to project downwardly through a suitable opening 112 in the upper flange of the aforesaid cleat and engage at its lowermost end or point with the ratchet teeth of the ratchet wheel 107. The upper arm 113 of said ratchet dog extends some distance above the upper flange of the cleat 104 and is provided at its extreme upper end with an overhanging enlargement or weight 114 whose center of gravity (in the full line position) is on the same side of the pivot 110 as is the lower ratchet arm of said ratchet dog 111. Thus when the dog is in its full line position the capstan drum 101 is prevented from rotating in a clockwise direction (looking rearwardly). However, if the center of gravity of the said weight 114 is shifted to the right, i. e., on the other side of the dog pivot 110, then the said dog will be held in the dotted line position and out of engagement with the ratchet wheel 107. This latter is the position of the dog when the handle 106 is being rotated in a clockwise direction for the purpose of lowering the burner plate 64. On the other hand, when it is desired to lift the burner plate, the weight 114 is thrown to the left and the handle 106 rotated manually until the said burner plate has been elevated as much as desired, at which point it will be automatically held by the coaction between the dog and the ratchet wheel. It should be particularly noted that this construction requires no springs and that the dog is automatically self holding in either its locked or its unlocked position by the throwing of the weight 114 toward the one direction or the other.

I claim as my invention:

1. An incinerator comprising an incinerating chamber adapted to receive refuse, a vertically movable burner plate arranged in said chamber and adapted to rest upon the upper surface of said refuse, and means for providing a flow of gas to the underside of said burner plate.

2. An incinerator comprising an incinerator chamber adapted to receive refuse, and a telescopic gas pipe arranged vertically in said chamber and connected at its one end

to a supply of gas, and a burner plate connected with the opposite end of said telescopic pipe and adapted to rest upon the upper surface of the refuse.

3. An incinerator comprising an incinerator chamber adapted to receive refuse, an upwardly tapering conical burner plate arranged within said chamber and adapted to rest upon the upper surface of the refuse, and a vertical telescopic gas pipe opening with its upper end into the convex lower side of said burner plate and communicating at its lower end with a supply of gas.

4. An incinerator comprising an incinerator chamber adapted to receive refuse, an upwardly tapering conical burner plate arranged within said chamber and adapted to rest upon the upper surface of the refuse, a vertical telescopic gas pipe opening with its upper end into the convex lower side of said burner plate and communicating at its lower end with a supply of gas, and means for positively raising said burner plate above the upper surface of the refuse.

5. An incinerator comprising an incinerator chamber adapted to receive refuse, an upwardly tapering conical burner plate arranged within said chamber and adapted to rest upon the upper surface of the refuse, a vertical telescopic gas pipe opening with its upper end into the convex lower side of said burner and communicating at its lower end with a supply of gas, and means for positively raising said burner plate above the upper surface of the refuse comprising a lifting chain extending vertically upwardly and then horizontally forwardly through the front wall of said incinerator chamber.

6. An incinerator comprising an incinerating chamber adapted to receive refuse, a vertically movable burner plate arranged in said chamber and adapted to rest upon the upper surface of said refuse, a horizontal air tube extending forwardly through the front wall of said incinerator chamber and extending rearwardly over the said burner plate, and an elevating chain arranged within said air tube and extending downwardly therefrom and connected at its lower end to said burner plate.

7. An incinerator comprising an incinerating chamber adapted to receive refuse, a vertically movable burner plate arranged in said chamber and adapted to rest upon the upper surface of said refuse, a horizontal air tube opening forwardly through the front wall of said incinerator chamber and extending rearwardly over said burner plate and provided at its rear end with an air orifice, and means arranged within said air tube and connected with the upper part of said burner plate for raising said burner plate.

8. An incinerator comprising an inciner-

ating chamber adapted to receive refuse, a vertically movable burner plate arranged in said chamber and adapted to rest upon the upper surface of said refuse, a smoke pipe
 5 connected to said incinerator chamber, a horizontal air tube opening forwardly through the front wall of said incinerator chamber and extending rearwardly to the vicinity of said smoke pipe and provided
 10 with an air orifice at its rear end, and a lifting chain arranged within said air tube and connected with the upper part of said burner plate.

9. An incinerator comprising an incinerator chamber adapted to receive refuse, a burner plate adapted to rest on the upper surface of said refuse, means for providing a flow of gas to the underside of said burner plate, and a downwardly tapered diffusing
 15 plate arranged within said incinerator chamber above said burner plate.

10. An incinerator comprising an incinerator chamber adapted to receive refuse, an upwardly tapering burner plate adapted to rest upon the upper surface of said refuse, means for providing a flow of gas to the underside of said burner plate, and a downwardly tapered, perforated diffusion plate
 25 arranged in said incinerator chamber above the said burner plate.

11. An incinerator comprising an incinerator chamber adapted to receive refuse, a burner plate, a tapered diffusing plate arranged in said chamber above the upper
 35 surface of said refuse and provided centrally with a clean-out hole, and a filler plate detachably arranged upon said diffusing plate and adapted to substantially cover the said clean out hole thereof.

12. An incinerator comprising an incinerator chamber adapted to receive refuse, a refuse filling door arranged in the front wall of said incinerator chamber, a burner plate, a diffusing plate arranged within said
 45 incinerator chamber above the said refuse-filling door thereof and provided centrally with a clean out hole and also provided with a filler plate removing notch on the periphery of said clean out hole, and a filler plate
 50 arranged on said diffusing plate over the clean-out hole thereof and adapted to be downwardly removable therefrom through said filler-plate removing notch.

13. An incinerator comprising an incinerator chamber adapted to receive refuse, an oscillatory grate bar arranged in said incinerator chamber and provided with an upwardly extending arm at its forward end, and a shaker handle pivoted to said grate
 55 bar arm transversely relatively to the oscillatory movement thereof, and resilient means arranged on the front wall of said incinerator chamber, for holding said shaker handle centrally in position.

65 14. An incinerator comprising an inciner-

ator chamber adapted to receive refuse, a grate bar arranged in said chamber and provided on its upper face with a retaining head, a vertical gas pipe provided at its lower end with a flange which engages the
 70 lower side of the retaining head of said grate bar, and means for feeding a combustible gas into said vertical gas pipe.

15. An incinerator comprising an incinerator chamber adapted to receive refuse, a grate bar arranged in said chamber and provided on its upper face with a retaining head and a detaining lug, a vertical gas pipe provided at its lower end with a flange which engages the lower side of the retain-
 75 ing head of said grate bar and also embraces the detaining lug thereof, and means for feeding combustible gas into said vertical gas pipe.

16. An incinerator comprising an incinerator chamber adapted to receive refuse, a grate bar provided with a retaining head and a detaining lug, and a vertical gas pipe provided with a flange which is diametrically slotted on its opposite sides, said slots
 85 being adapted to embrace respectively said detaining lug and the lower face of said retaining head.

17. An incinerator comprising an incinerator chamber adapted to receive refuse, a hollow central grate bar having a flat upper central surface and provided with a retaining head and a detaining lug, and a hollow, vertical telescopic gas pipe provided with a diametrically slotted flange at its lower end and adapted to rest on the flat upper
 95 surface of said central grate bar.

18. An incinerator comprising a chamber adapted to receive the refuse, and an upright telescopic tube arranged in the center of said chamber and adapted to receive a heating medium at its lower end and discharge the same at its upper end.
 105

19. An incinerator comprising an incinerator chamber adapted to receive refuse, and a hollow grate bar provided with a longitudinal row of gas apertures on its lower face and further provided with a longitudinal row of lateral supporting arms located directly above said gas apertures and having their lower faces extending downwardly and outwardly away from said gas apertures.
 110 115

20. An incinerator comprising an inner heated wall forming a combustion chamber, and an outer insulating wall arranged in spaced relation to said inner heated wall, the space intermediate of said inner and outer walls communicating at its lower end with a source of cool air and at its upper end with the said combustion chamber.
 120 125

21. An incinerator comprising an inner heated wall forming a combustion chamber and provided with a vertical row of air-diluting holes adapted to be, at times, sealed
 130

up with refuse, and an outer insulating wall, the vertical space intermediate of said inner and outer walls communicating at its lower end with a source of cool air and at its upper end with the said air-diluting holes.

22. An incinerator comprising an outer insulating wall, a shelf extending inwardly from said insulating wall above the lower end of the latter, and an inner heated wall supported by said shelf and forming interiorly a combustion chamber and disposed in spaced relation to said outer wall and provided with air-diluting holes at its upper end communicating with said combustion chamber and also with the space which is intermediate of said inner and outer walls.

23. An incinerator comprising an incinerating chamber adapted to receive refuse, a vertically movable burner plate arranged in said chamber and adapted to rest upon the upper surface of said refuse, and a plurality of clearance lugs formed on the lower periphery of said burner plate.

24. An incinerator comprising an incinerating chamber adapted to receive refuse, a vertically movable burner plate arranged in said chamber and adapted to rest upon the upper surface of said refuse, means for providing combustible gas to the lower face of said burner plate, and a lighting door arranged on said burner plate.

25. An incinerator comprising an incinerating chamber adapted to receive refuse, a vertically movable burner plate arranged in said chamber and adapted to rest upon the upper surface of said refuse, means for providing combustible gas to the central under surface of said burner plate, and a conducting gas tube extending from the central under part of said burner plate to the periphery thereof.

26. An incinerator comprising an upwardly tapering conical burner plate, a gas pipe opening centrally into the concave space below said burner plate, and a conducting gas tube extending from the central under part of said burner plate out to the periphery thereof.

27. An incinerator comprising a vertical gas pipe, a burner plate adapted to rest on the upper surface of the refuse and secured to said gas pipe and vertically adjustable relatively thereto.

28. An incinerator comprising a vertical gas pipe, an upwardly tapering conical burner plate adapted to rest upon the upper surface of the refuse, and connecting brackets secured to said burner plate and adjustably connected with said gas pipe.

29. An incinerator comprising a burner plate, a gas pipe opening into the lower side of said burner plate and consisting of a number of telescopic tubes whose upper peripheral edges are beveled.

30. An incinerator comprising a burner plate, a gas pipe opening into the lower side of said burner plate and consisting of telescopic tubes which are provided with internal flanges at their upper ends and peripheral flanges at their lower ends.

31. An incinerator comprising a chamber adapted to receive the refuse, and an upright telescopic tube arranged in said chamber and adapted to receive a heating medium at its lower end and to discharge the same at its upper end, said telescopic tube being of large diameter at its lower end and of small diameter at its upper end and contracting from its lower end toward its upper end.

EDWARD KENER, JR.