

July 1, 1930.

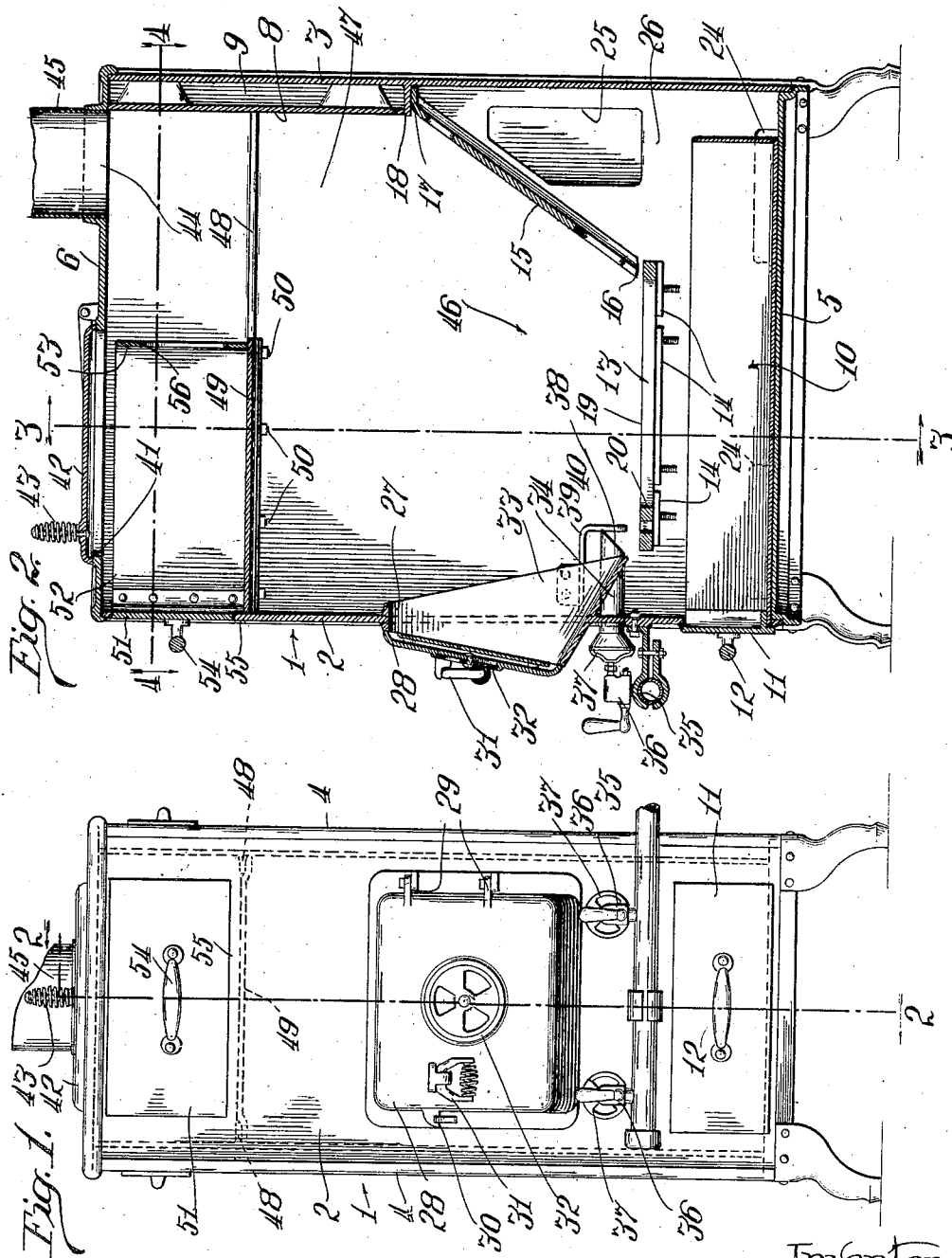
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1,769,879

INCINERATOR

Filed Oct. 27, 1927

2 Sheets-Sheet 1



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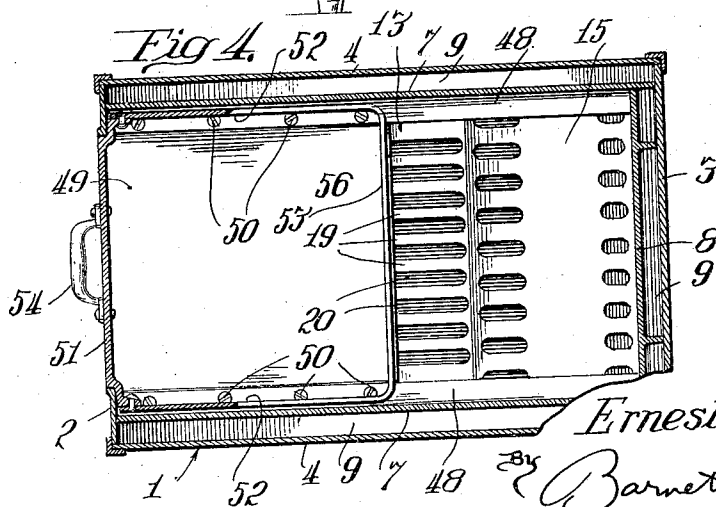
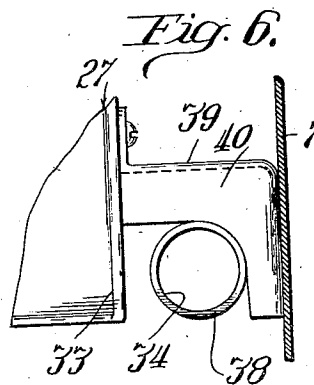
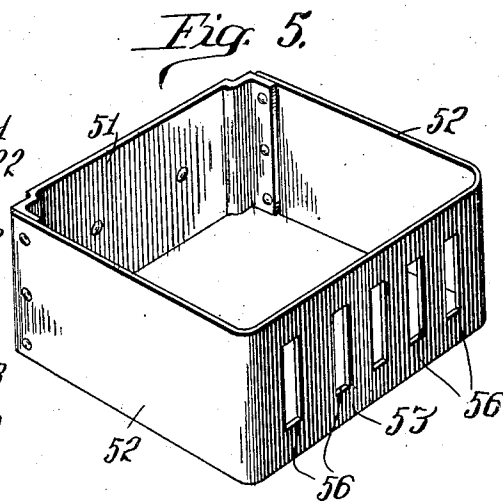
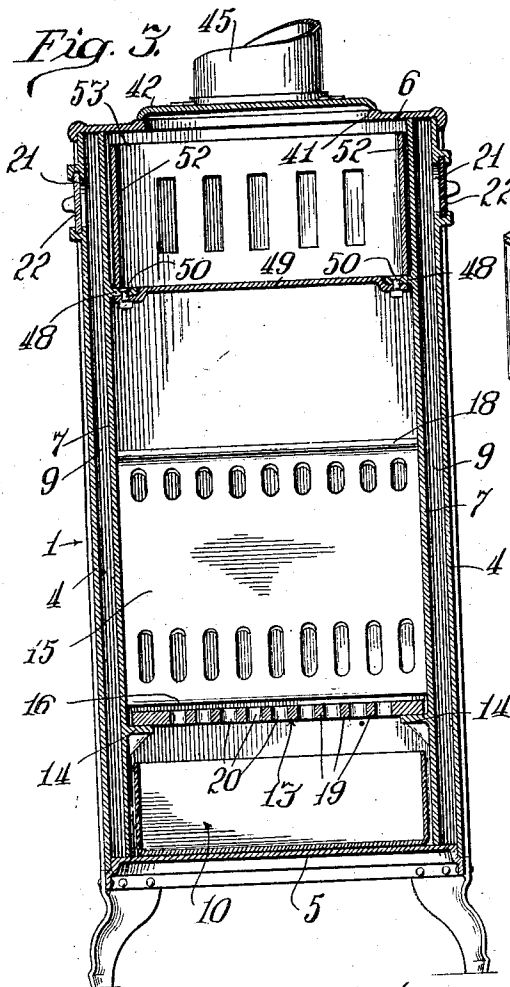
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UNITED STATES PATENT OFFICE

ERNEST O. HOWLE, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
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INCINERATOR

Application filed October 27, 1927. Serial No. 229,051.

This invention relates to improvements in an incinerator, particularly adapted for use in the basement of a home or other building for burning garbage and other refuse of all
5 kinds.

One of the principal objects of the invention is to provide an incinerator of this type, adapted to handle wet and dry materials, provision being made for drying out the wet
10 materials before they are introduced into the furnace chamber and burned, and means are also provided to force malodorous vapors or gases issuing from the drying material to pass through the burning zone, or
15 combustion chamber before they enter the flue.

More specifically, the invention contemplates the use of a fixed shelf adapted to temporarily support wet materials such as
20 garbage above the furnace chamber proper, in combination with movable means for maintaining the wet materials upon this shelf or alternatively projecting the dried materials into the rear portion of the furnace
25 chamber.

Other objects and advantages of this invention will be apparent from the following detailed description of one approved form of the apparatus.

30 In the accompanying drawings:

Fig. 1 is a front elevation of the incinerator.

Fig. 2 is a central vertical section taken substantially on the line 2—2 of Fig. 1.

35 Fig. 3 is a transverse vertical section taken substantially on the line 3—3 of Fig. 2.

Fig. 4 is a horizontal section, taken substantially on the line 4—4 of Fig. 2.

40 Fig. 5 is a perspective view of the sliding drawer, removed from the incinerator.

Fig. 6 is an enlarged detailed vertical section illustrating one of the burner-shields.

The incinerator comprises an outer steel shell 1, consisting of a front wall 2, a back
45 wall 3, side walls 4, a bottom 5 and a top 6. An inner cast iron shell consisting of vertical side walls 7 and a rear wall 8 encloses the furnace and combustion chambers, the walls
50 7 and 8 being spaced from the walls 4 and 3 of the outer shell to define an air space 9

therebetween for preheating the combustion air. An ash-receiving receptacle 10 rests upon the bottom 5 of the casing, and is slidably introduced through an opening in the front wall of the outer shell 1, the vertical
55 front wall 11 of the receptacle 10 serving to close this opening when the receptacle is in place. A handle 12 is provided on the front of the receptacle for withdrawing same to empty the ashes. A main horizontal grate
60 13 is supported in the lower portion of the incinerator above the receptacle 10 by means of brackets 14 extending inwardly from the side walls 7. This grate 13 is shorter than the depth of the incinerator casing from
65 front to rear, (as best shown in Fig. 2) so that the grate may be shifted horizontally to sift the ashes and to dump incombustible material such as tin cans into the receiver 10. A rear grate 15 is supported between the
70 side walls 7 in an upwardly and rearwardly inclined position with its lower end 16 positioned above the rear end of horizontal grate 13, and its upper edge 17 positioned beneath the ledge 18 which supports the rear wall 8
75 of the inner-casing, which as shown in Fig. 2 terminates directly above the upper end of the rear grate 15. In the example shown, both grates are of the well known type consisting of spaced parallel bars 19 which are
80 connected at intervals so as to form elongated spaces 20 therebetween.

Suitable air inlets 21 are provided in the upper portions of the outer side walls 4, sliding dampers 22 being provided to regulate
85 these air inlets. The pre-heated air passes from the space 9 between the side walls through openings 24 at the bottom of the casing into the ash-receiving space and thence up through the grate. Air also passes through the openings 25 in the rear portion of the inner side walls 7 into the space 26 behind
90 the rear grate 15 and thence through this grate into the furnace chamber.

An inlet opening 27 in the front wall 2
95 of the outer casing, slightly above the grate 13, is normally closed by a door 28 hinged in any suitable manner at 29, and provided with a catch 30 and a handle 31. A damper 32 of
100 usual form may be provided in door 28. A

chute 33 formed within the inlet opening 27 projects inwardly and downwardly to direct dry materials which are introduced through this opening, onto the horizontal grate 13.

5 A pair of gas burners 34 supplied from gas manifold 35 and controlled by gas valves 36 and air inlet valves 37, are mounted in the front wall 2 directly above the grate 13 and one at either side of chute 33. The outlet
10 openings of these burners are beveled or undercut as indicated at 38 so as to minimize the danger of materials which are introduced into the incinerator clogging the gas outlets. To increase this protection, shields 39 (best
15 shown in Fig. 6) are mounted between the chute 33 and side walls 7 and have front portions 40 slightly overhanging the burners 34 so as to shield these burners as far as possible from the materials within the incinerator. It
20 will be noted that these burners project their flames into the material in the furnace chamber directly above the grate 13 so as to obtain the maximum benefit of these flames in maintaining the combustion while at the same time
25 minimizing the heat to which the grate 13 is subjected. In the usual form, wherein the burners are projected upwardly through the grate from beneath, a great deal of the heat from these burners is wasted in heating the
30 grate.

A second inlet opening 41 is provided in the forward portion of the top plate 6 of the shell 1, this opening being provided with a cover 42 having a handle 43 by which the cover may
35 be conveniently lifted, this opening 41 is used for the introduction of garbage and other wet refuse. A flue or outlet 44 for the gaseous products of combustion is provided in the rear portion of top plate 6, this flue communicating with a chimney 45. The gaseous products of combustion arising from the furnace
40 chamber 46 pass upwardly through the combustion chamber 47 in the upper portion of the receptacle and thence outwardly through flue 44 into chimney 45.

A pair of horizontal guides or runways 48 are cast integrally with or secured to the opposite inner side walls 7 of the receptacle, in the upper portion thereof. A shelf 49 joining
50 the side walls and extending backwardly approximately half the depth of the incinerator is supported from the forward portion of the guides 48 in any suitable manner, for example by being bolted thereto as indicated at 50 in Fig. 3. A bottomless
55 drawer, consisting of a front wall 51, side walls 52 and a rear wall 53 is slidably mounted upon the guides 48. When this drawer is in its normal forward position as indicated in the drawings, a portion of the front wall 51 thereof will close a correspondingly shaped opening in the upper portion of the front wall 2 of the incinerator, there being a handle 54
60 projecting forwardly from this portion of the front wall 51. When in this position, the

drawer is adapted to receive the wet materials introduced through the top inlet opening 41, and at such times the shelf 49 serves as a bottom for the drawer. A lip portion 55 on front wall 2 extends upwardly above
70 shelf 49 so as to prevent liquids draining out through the front of the incinerator casing. A plurality of openings 56 formed in the rear wall 53 of the drawer permit vapors and gases driven off from the drying material to pass
75 rearwardly into the combustion chamber 47 where they mingle with the heated gases arising from the furnace chamber 46.

In operation, the drawer will normally be maintained in the position indicated in the drawings. Dry refuse will be introduced into the incinerator through the front inlet opening 27, and garbage or other wet refuse will be introduced through the upper opening 41. When sufficient refuse has been accumulated,
80 the burning will be started by lighting the gas burners 34. No great amount of heat is required from the burners which are merely necessary to initiate and maintain the combustion. The heat produced by the burning
85 materials upon the grates 13 and 15 will heat the incoming combustion air which must pass between the inner and outer casings, thus utilizing to pre-heat the combustion air heat that would otherwise be lost through radiation. The combustible materials will not
90 only be supported upon the bottom grate 13 but will also be piled against the rear upwardly inclined grate 15 so that the area of this material exposed to the incoming combustion
95 air will be considerably increased and the combustion facilitated. The hot gaseous products of combustion will pass upwardly through the combustion chamber 47 and outwardly through the flue 44 to the chimney 45. During this passage they will impinge
100 against the lower surface of shelf 49 and heat the wet materials which are confined thereon by the slidable drawer. The malodorous vapors and gases driven off from the drying
105 materials in the drawer will pass out through openings 56 in the rear baffle wall of the drawer into the combustion chamber 47 where they meet the hot combustion gases rising from the furnace and are broken down or consumed so that only unobjectionable gases
110 pass out through the flue 44. When the material supported above the shelf 49 has been sufficiently dried, the handle 54 may be grasped and the drawer pushed inwardly along the guides 48 to the rear portion of the incinerator so as to push the dried materials
115 from shelf 49 and dump them through the open bottom of the drawer into the furnace chamber. These dried materials will thereafter be consumed along with the other dry materials which are inserted through the front inlet opening 27. Ashes and other incombustible materials will fall through the grate 13 into the ash receptacle 10, and the
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lower grate 13 may be pushed back along the supporting brackets 14 so that incombustible materials too large to pass through the grate may be scraped or dumped into receptacle 10. The ashes will be disposed of in the usual manner by withdrawing receptacle 10 from the incinerator.

It will be apparent that when the drawer is pushed to its innermost position the dried materials will be projected from the shelf 49 into the rearmost portion of the inclinator so that they will fall upon the rear grate 15 and thence downwardly onto the rear portion of horizontal grate 13, this being the most desirable position for these materials to facilitate the combustion processes. By leaving the slidable drawer for a short time in this rear position, the heated gases passing upwardly through combustion chamber 47 will flow through the drawer so as to burn out and cleanse the same before it is drawn back to its normal position above shelf 49 to receive another supply of wet material through the upper inlet opening 41.

I claim:

1. In an incinerator including a receptacle housing a furnace chamber in its lower portion, an inlet opening in the top of the receptacle, a closure for the opening, means for supporting wet material above the furnace chamber including a shelf extending across a portion of the upper part of the receptacle beneath the inlet opening, and a bottomless drawer slidably mounted above the shelf.

2. In an inclinator including a receptacle housing a furnace chamber in its lower portion, an inlet opening in the top of the receptacle, a closure for the opening, means for supporting wet material above the furnace chamber including horizontal guides mounted on the opposite inner side walls of the receptacle, a bottomless drawer slidable along these guides, and a shelf connecting a portion of the guides beneath the inlet opening to form a closure for the bottom of the drawer when in one position.

3. In an incinerator including a receptacle housing a furnace chamber in the lower portion, means for supporting wet material above the furnace chamber including horizontal guides mounted on the opposite inner side walls of the receptacle, an opening in the front of the receptacle, an inlet opening in the top of the receptacle, a closure for the latter opening, a bottomless drawer slidable along the guides, a portion of the front wall of the drawer serving to close the front opening in the receptacle when the drawer is in its extreme forward position at which time the drawer is beneath the inlet opening, and a shelf connecting the forward portions of the guides to serve as a closure for the bottom of the drawer when in its forward position.

4. In an incinerator including a receptacle housing a furnace chamber in its lower po-

sition, means for supporting wet material above the furnace chamber including horizontal guides mounted on the opposite inner side walls of the receptacle, an opening in the front of the receptacle, an inlet opening in the top of the receptacle, a closure for the latter opening, a bottomless drawer slidable along the guides, a portion of the front wall of the drawer serving to close the front opening in the receptacle when the drawer is in its extreme forward position at which time the drawer is beneath the inlet opening, and a shelf connecting the forward portions of the guides to serve as a closure for the bottom of the drawer when in its forward position, there being outlets formed in the rear wall of the drawer to permit the escape of gases into the combustion chamber of the incinerator.

5. In an incinerator including a receptacle housing a furnace chamber in the lower portion, means for supporting wet material above the furnace chamber including a shelf extending across a portion of the upper part of the receptacle, and a bottomless drawer slidably mounted above the shelf, there being outlets formed in the rear wall of the drawer to permit the escape of gases into the combustion chamber of the incinerator.

6. In an incinerator including a closed receptacle, a horizontal grate and an upwardly inclined rear grate in the lower portion of the receptacle, means in the front of the receptacle for introducing dry materials to the furnace chamber above the grates, a flue opening from the upper rear portion of the receptacle, an opening in the upper front portion of the receptacle for introducing wet materials, a closure for this opening, a shelf beneath the opening for supporting the wet materials, and means movable from front to rear of the receptacle for alternatively confining wet materials upon the shelf or projecting these materials when dried into the rear portion of the furnace chamber.

7. In an incinerator including a closed receptacle, a horizontal grate and an upwardly inclined rear grate in the lower portion of the receptacle, means in the front of the receptacle for introducing dry materials to the furnace chamber above the grates, a flue opening from the upper rear portion of the receptacle, an opening in the upper front portion of the receptacle for introducing wet materials, a closure for this opening, a shelf beneath the opening for supporting the wet materials, a pair of guides extending along the inner side walls of the receptacle toward the rear thereof and in line with the shelf, there being an opening in the front wall of the receptacle, a bottomless drawer adapted to slide from front to rear along the shelf and guides, a portion of the front of the drawer closing the last mentioned opening when the drawer is in its forward position

beneath the upper inlet for the wet materials, with the shelf forming a closure for the bottom of the drawer.

8. In an incinerator including a closed receptacle, a horizontal grate and an upwardly inclined rear grate in the lower portion of the receptacle, means in the front of the receptacle for introducing dry materials to the furnace chamber above the grates, a flue opening from the upper rear portion of the receptacle, an opening in the upper front portion of the receptacle for introducing wet materials, a closure for this opening, a shelf beneath the opening for supporting the wet materials, a pair of guides extending along the inner side walls of the receptacle toward the rear thereof and in line with the shelf, there being an opening in the front wall of the receptacle, a bottomless drawer adapted to slide from front to rear along the shelf and guides, a portion of the front of the drawer closing the last mentioned opening when the drawer is in its forward position beneath the upper inlet for the wet materials, with the shelf forming a closure for the bottom of the drawer, there being outlets formed in the rear wall of the drawer to permit the escape of gases into the combustion chamber of the incinerator.

9. In an incinerator including a closed receptacle having a combustion chamber in the lower portion thereof, a front inlet opening and a rear flue outlet in the top of the receptacle, a closure for the inlet opening, a drawer open at the top and bottom movable from a position beneath the inlet opening to a position beneath the flue, and a fixed shelf beneath the inlet opening, the shelf serving as a closure for the bottom of the drawer when in the first position.

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