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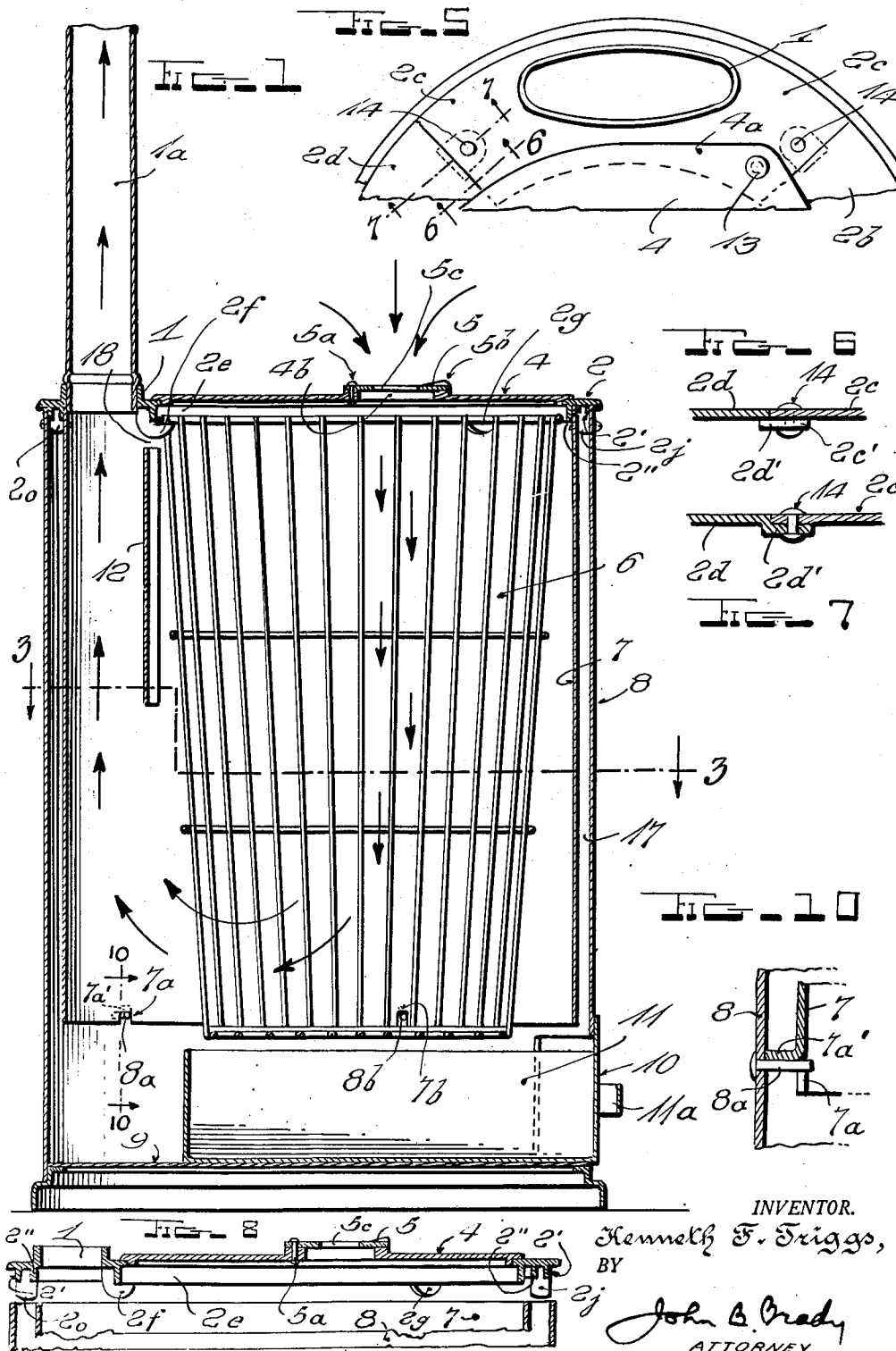
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2,538,811

DOWNDRAFT INCINERATOR

Filed Oct. 15, 1947

2 Sheets-Sheet 1



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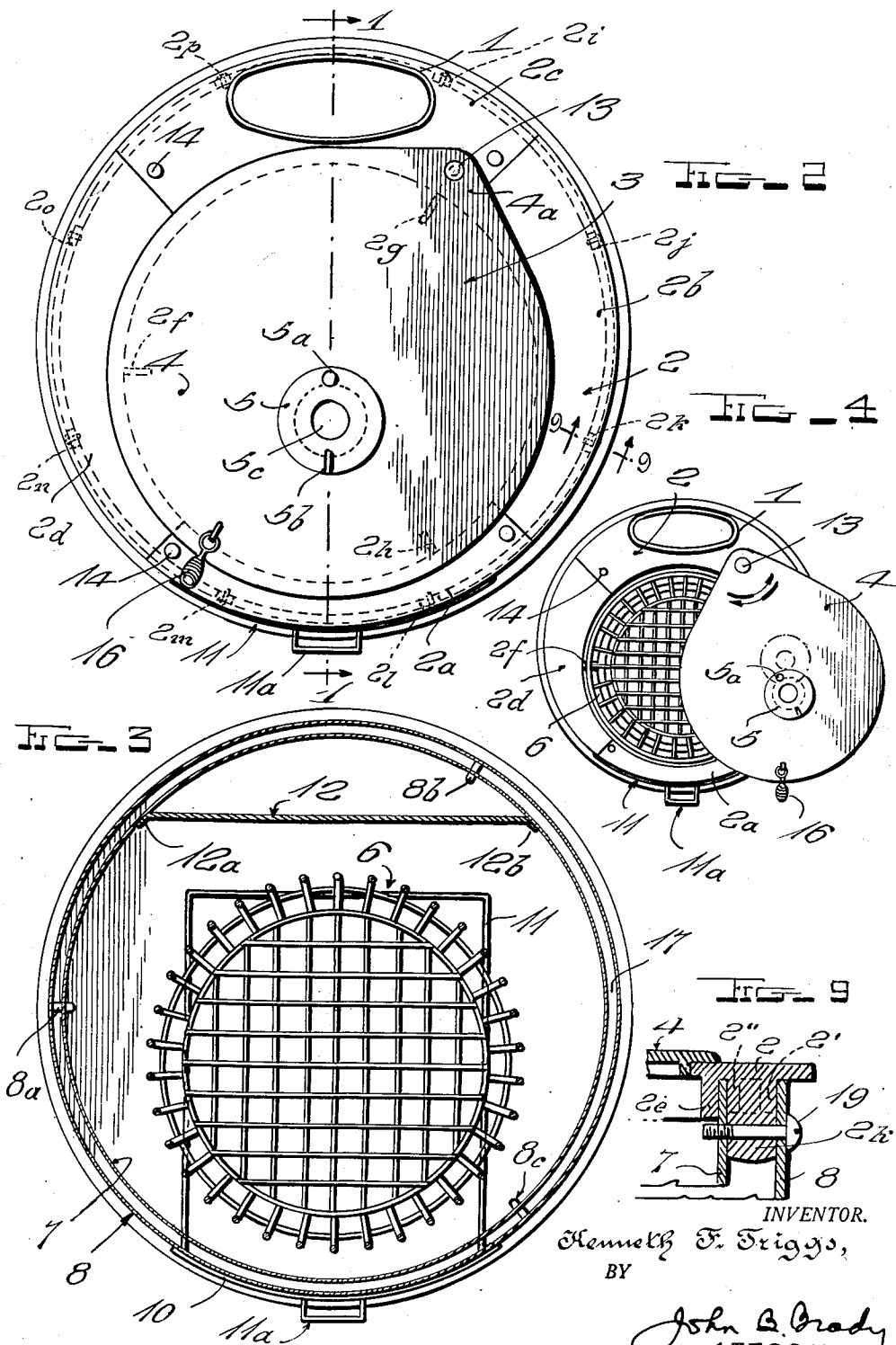
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,538,811

DOWNDRAFT INCINERATOR

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3 Claims. (Cl. 110—18)

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My invention relates broadly to incinerators, and more particularly to an improved construction of downdraft incinerator.

One of the objects of my invention is to provide a construction of an incinerator for installation in the basement of a house or other building or in any other suitable location either indoors or out-of-doors in which a connection may be made to a chimney flue, and in which small quantities of trash and slow burning garbage may be frequently and conveniently burned.

Another object of my invention is to provide an improved construction of downdraft incinerator including an open wire basket for receiving the material to be disposed of and wherein the basket may be completely removed from the casing of the incinerator.

Still another object of my invention is to provide a construction of downdraft incinerator having a housing and an internal lining specially related thereto and associated with a baffle member for directing the downdraft through the incinerator to the flue with which the incinerator is connected.

A further object of my invention is to provide an improved construction of downdraft removable wire basket type incinerator having a top portion with integrally related flanges connected therewith and serving to align the top opening of the incinerator with the basket receiver therein and to specially relate the lining and a baffle member with respect to the flue with which the incinerator is connected.

Other and further objects of my invention reside in the simplified construction of open wire basket type of downdraft incinerator as set forth more fully in the specification hereinafter following, by reference to the accompanying drawings, in which:

Figure 1 is a vertical sectional view taken through the improved downdraft incinerator of my invention;

Fig. 2 is a top plan view of the incinerator shown in Fig. 1 and illustrating the angularly removable lid through which the wire basket receiver may be inserted and removed and through which waste matter may be charged into the incinerator;

Fig. 3 is a transverse sectional view taken substantially on line 3—3 of Fig. 1;

Fig. 4 is a top plan view illustrating the lid angularly shifted to an intermediate position in the course of the insertion or removal of the open wire basket into the incinerator;

Fig. 5 is a fragmentary top plan view illustrating the manner of forming the top of the incinerator in a multiplicity of sections;

Fig. 6 is a fragmentary cross sectional view taken on line 6—6 of Fig. 5;

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Fig. 7 is a fragmentary cross sectional view taken substantially on line 7—7 of Fig. 5; and

Fig. 8 is a fragmentary vertical sectional view of the top portion of the incinerator showing the manner of spacing the inner and outer shells and the entrance way to the open wire basket receiver, and illustrating the means for supporting the basket receiver;

Fig. 9 is an enlarged detail sectional view of the structure for spacing the inner and outer shells, the view being taken substantially on line 9—9 of Fig. 2; and

Fig. 10 is a detail sectional view on line 10—10 of Fig. 1, showing the manner of spacing the inner and outer shells at the bottom of the inner shell.

My invention is directed to an incinerator which is inexpensive in manufacture and production and highly efficient in installation in the basement of a home or other building, or outdoors if desired, wherever connection may be made between the incinerator and the flue of a chimney. The incinerator of my invention employs the downdraft principle of combustion and makes use of an open wire type of basket which may be readily inserted into the incinerator and removed therefrom through an angularly movable top lid. The top structure of the incinerator is provided with depending flanges which serve as spacing means for the inner and outer shells of the incinerator and as a centering means for the entry and removal of the open wire basket. The inner shell serves as a guide for the downdraft products of combustion and is provided with a baffle aligned with the connection to the chimney flue for confining the gases in a path leading to the chimney flue. The removable lid carries a draft door through which the contents within the open wire basket may be ignited and through which a draft may be established extending downwardly through the contents of the wire basket and upwardly through the chimney flue. A removable receiver is provided at the base of the incinerator for the discharge of ashes which accumulate from time to time.

Referring to the drawings in more detail, reference character 1 indicates the incinerator outlet formed in the top ring or casting 2 over which a six inch smoke pipe is connected, as represented at 1a, leading to the chimney flue or to a furnace smoke pipe which connects with the chimney flue. The top ring 2 of the incinerator is composed of four parts joined together with lugs or bolts to facilitate manufacture, which parts I have indicated at 2a, 2b, 2c and 2d. The several aligned parts 2a—2d have underside grooves formed by depending flanges 2' and 2'' in which the casing 3 and the liner 7, constituting the outer and inner shells, are confined.

Reference character 3 designates the top as-

sembly which consists of the angularly movable lid 4 and the angularly displaceable draft door 5. The angularly movable lid 4 is substantially circular in contour with an enlarged peripheral portion 4a at one side thereof through which the pintle 13 extends, providing a connection with the top ring portion 2c and forming a pivot around which the lid 4 may swing in a substantially horizontal plane. The draft door 5 is pivotally mounted at 5a on lid 4 in a position eccentric to the center of the lid 4 in a forward direction, thus placing the draft door 5 nearer the front of the incinerator, as represented more fully in Fig. 2. The draft door 5 serves as a cover member for the aperture 4b in the lid 4. The aperture 4b has a suitable upstanding flange thereon over which the draft door 5 is adapted to be angularly adjusted about pivot 5a. A finger grip 5b is provided on the draft door 5 to facilitate the angular adjustment thereof about pivot 5a to cover or uncover aperture 4b in varying amounts. A central aperture 5c is provided in the draft door 5 and serves as an ignition opening through which a flame may be applied with a match for igniting the contents deposited in the wire basket 6 which is introduced and withdrawn through the central opening 2c in the top ring of the incinerator when the lid 4 is swung out of obstructing position, in the manner represented in Fig. 4. The lid 4 is angularly moved by grasping the handle 16 for swinging the lid to a position uncovering the central opening 2c or to a position closing the central opening.

The open wire basket 6 is tapered in its construction and, when introduced through the opening 2c, is supported by three protruding fingers 2f, 2g and 2h extending inwardly from the circumference of the opening 2c in top 2. An ash receiving receptacle 11 in the form of a slidable drawer having a door portion 12 curved to conform with the contour of the outside of the outer shell 3 arranged beneath the wire basket 6 and provided with a handle 11a to permit the ash receptacle to be withdrawn with respect to the base 9 of the incinerator. The base 9 is formed from a circular steel structure having a solid bottom welded onto the outside casing 3, making a tight fitting base assembly which supports the slidable ash deposit receptacle 11. Ashes accumulated in the drawer 11 may be readily discharged by removal of drawer 11 and reinsertion thereof for continued use of the incinerator.

The inner shell 7, which is spacially related to the outer shell 8, is provided with peripheral recesses 7a, 7b and 7c (not shown). The recesses are formed by making two vertical cuts in the material of the inner shell 7 a short distance apart, then bending the free sections outwardly to form a projecting flange, represented at 7a' in Fig. 10. This flange is the means by which inner shell 7 is separated from outer shell 8 at this point. The recesses 7a, 7b and 7c fit over radially extending pins 8a, 8b and 8c projecting inwardly from the outer shell 8 for spacing the inner shell 7 with respect to the outer shell 8. The inner shell 7 is suspended from the top 2 by means of eight depending lugs 2i, 2j, 2k, 2l, 2m, 2n, 2o and 2p, that merge at spaced intervals with the depending flanges 2' and 2'' and extending between the inner and outer shells 7 and 8. Screws 19 extend radially through outer shell 8 and through spacing lug 2k and through inner shell 7 for spacing the shells 7 and 8 and sup-

porting inner shell 7 with respect to outer shell 8 as shown more clearly in Fig. 9. A zone of confined gases is provided at 17 between the inner and outer shells 7 and 8 facilitating the operation of the downdraft incinerator.

The inner shell 7 serves to support a baffle 12 which is welded at opposite ends 12a and 12b to the inner wall of the shell 7 just in front of the flue opening 1 and somewhat below the top of the incinerator. The baffle 12 is substantially chordal with respect to the plane section of the inner shell 7. The baffle 12 is spaced below the top section 2, as represented by the space 18, so that, when the incinerator is fired, this space may be provided with an unimpeded draft until more complete ignition takes place, at which time the air, passing through the port 5c in draft door 5 tends to push the fire down and the draft tends to pull the fire down under and back of the lower edge or terminus 12a of baffle 12 and back of the baffle 12 before the gases reach the flue 1a.

The assembly of the parts constituting the top ring 2 is facilitated by the arrangement of bracket means illustrated more fully in Figs. 5-7. The top section 2c is arranged co-planar with top section 2d with bracket 2d' on top section 2d extending beneath top section 2c and connected therewith through rivet member 14. Thus, the several sections constituting the top ring assembly 2 mutually align and support each other by the action of the co-acting bracket and adjacent edge portions of the several top sections.

As represented in Fig. 3, the depending flanges 2', 2'' serve as positive spacer means for the outer and inner shells 8 and 7 surrounding the connection 1 to the flue and the entry way 2e for the wire basket 6.

As heretofore explained, the wire basket 6 is very easily removed through the entry way 2e so that any unburnable refuse, such as bottles, can tops, etc., may be left in the basket and the entire basket and contents removed from the incinerator for further disposal. In operation, garbage and waste paper and other waste products of the home are placed in the basket 6 of the incinerator. At any time, but more particularly when the incinerator is full, the top of the charge may be lighted either through the main charging door or lid 4 or through the aperture 4b adjustably covered by draft door 5 or through the aperture 5c in draft door 5. The draft door 5 does not close completely tight as the small hole or aperture 5a in the center thereof always remains open and, thus, a small amount of air circulates down through this aperture and in and around the contents of the receiver and is drawn up the flue by natural draft at all times. This circulation tends to dry wet garbage that may be in the incinerator. When the incinerator is full and lighted, the draft coming from the top drives the heat downward before it can turn to go up the flue and this further dries the charge if wet. The small permanent draft hole 5c serves as a continuous entrance for air, induced by the updraft through the chimney 1a, for drying the garbage and other refuse within the incinerator even while the same is not burning. The space 18 between baffle 12 and top assembly 2 provides a minimum of draft for the beginning of combustion. In exceptional cases, where the moist material far overbalances the combustionable waste, there may be an unburned residue in the bottom of the incinerator when burning has been completed. However, this continues to dry out dur-

ing the process of recharging and eventually will burn clear through to the bottom of the basket 6. The operation of the incinerator in no way affects the heating plant to which it is connected or with which it shares the common flue of the house. The small amount of draft entering the draft door does not appreciably affect the draft of the flue and when there is fire in the incinerator it actually builds up the draft of the flue. When the incinerator is lit the first flash of combustion will discharge into the passage in the zone 18 between the top edge of baffle 12 and the top assembly 2, thereby creating a greater draft in the flue 1a for the pulling down of the draft through the large opening in the lid. The force of the draft entering the lid definitely tends to blow away the accumulation of ashes of the burning material, exposing new and unburned matter to the incoming air, thus accelerating combustion. I have repeatedly demonstrated the effectiveness of my design by simple tests in the burning of piled magazines in the incinerator, one on top of the other. By lighting only the cover page of the top magazine, the down draft blows away the burned paper of the first page, igniting the second page and so on until the entire stack of magazines is consumed.

I have found the downdraft principle applied to the removable receptacle type of incinerator highly practical in operation and, while I have described my invention in one of its embodiments, I realize that modifications may be made and I desire it to be understood that no limitations upon my invention are intended other than may be imposed by the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is as follows:

1. A downdraft incinerator comprising a casing having an opening at the top to receive a removable open-mesh container, a liner spaced from the interior walls of said casing, means for supporting said liner from said casing, a chimney connection adjacent one side of the top of said casing, a lid pivotally mounted on the top of said casing and movable in a substantially horizontal plane to a position covering or uncovering the top opening of said casing to allow the insertion or removal of said open-mesh container with respect to said casing, a draft door disposed in said lid for permitting the entry of a downdraft through said container, and a baffle member supported by said liner and extending substantially chordal thereto and disposed intermediate said open-mesh container and said chimney connection, the upper edge of said baffle member being spaced below the top of said casing and forming a draft passage between the draft door in said lid and the chimney connection.

2. A downdraft incinerator comprising a casing having an opening at the top to receive a removable open-mesh container, a liner spaced from the interior walls of said casing, means for supporting said liner in said casing, a chimney connection adjacent one side of the top of said casing, a lid pivotally mounted on the top of said casing and movable in a substantially horizontal plane to a position covering or uncovering the top opening of said casing to allow the insertion or removal of said open-mesh container with respect to said casing, a draft door

disposed in said lid for permitting the entry of a downdraft through said container, and a baffle member supported by said liner and extending substantially chordal thereto and disposed intermediate said open-mesh container and said chimney connection, the upper edge of said baffle member being spaced below the top of said casing and forming a substantially transverse draft passage between the draft door in said lid and the chimney connection immediately beneath the lid, said draft door having an opening therein for introducing an igniting flame for igniting the contents of the open-mesh container facilitated by a draft substantially transverse of said container extending in a path beneath said lid between the upper edge of said baffle member and the top of said container to said chimney connection for progressively developing a downdraft through said container and around the lower edge of said baffle member in a direction upwardly through said chimney connection.

3. A downdraft incinerator comprising a supporting base, a casing supported on said base, a top member having a chimney connection adjacent one side thereof and having a multiplicity of downwardly extending spaced flanges, one of said flanges engaging the upper end of said casing, a liner connected with another of said flanges and disposed in spaced relation to the interior wall of said casing and depending from said top member, means extending from the side wall of said casing for supporting the lower end of said liner, another of said flanges defining an opening through said top member, an open-mesh container arranged to be inserted or removed through the opening in said top member, a lid pivotally connected with said top member and angularly movable in a substantially horizontal plane to cover or uncover the opening therein, said lid having an aperture therein, a ported draft door mounted on said lid and movable to cover or uncover the aperture therein, and a baffle member supported by the interior wall of said liner in a position intermediate said chimney connection and the open-mesh container, the upper edge of said baffle member being spaced below said top member for forming a draft passage transversely of said container from the ported draft door to said chimney connection and the lower edge of said baffle member serving to guide products of combustion in a downdraft path through said ported draft door and through said container around said baffle member and upwardly through said chimney connection.

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