March 26, 1929. H. H. HEYBECK 1,707,011

INCINERATOR HOPPER AND SEAL

Filed June 3, 1927

Fig. 1

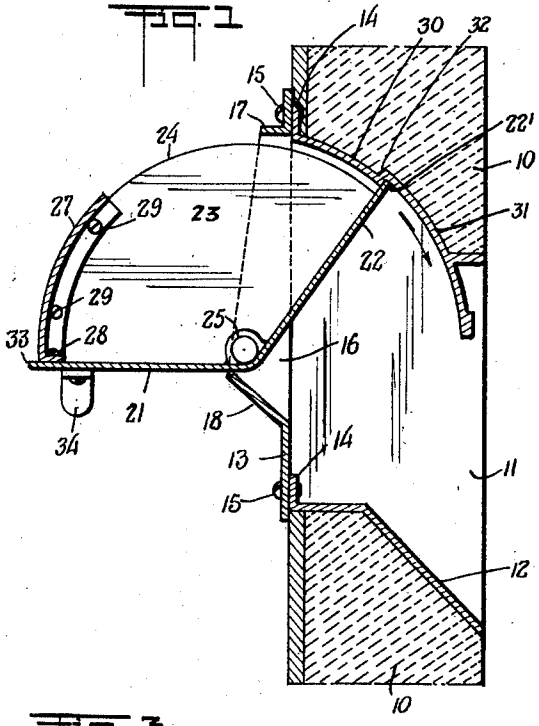


Fig. 2

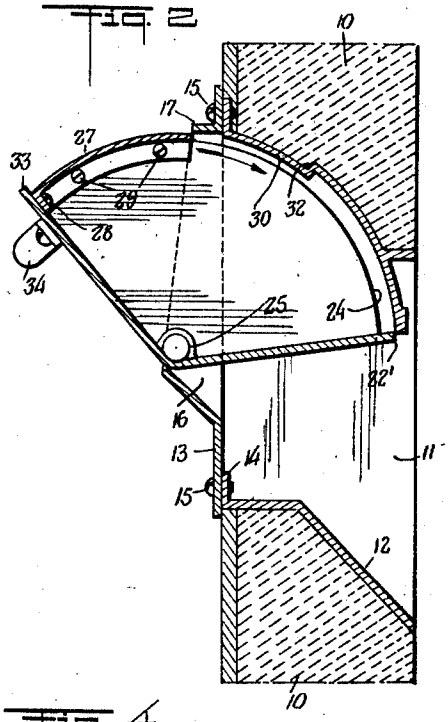


Fig. 3

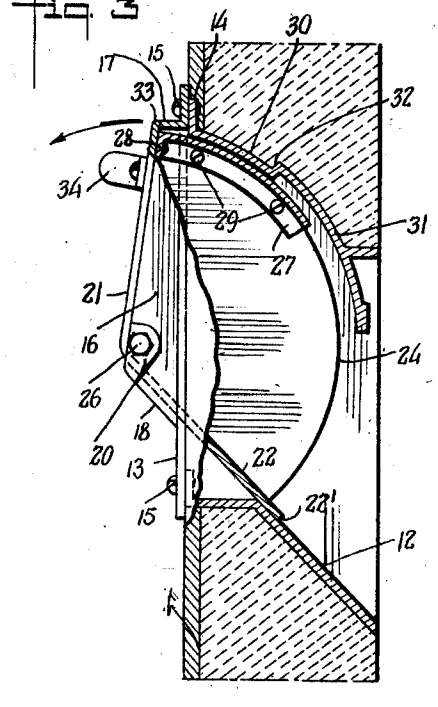
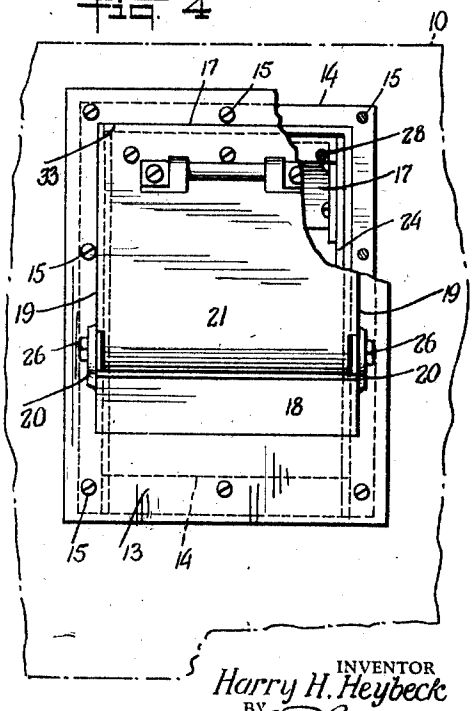


Fig. 4



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UNITED STATES PATENT OFFICE.

HARRY H. HEYBECK, OF NEW YORK, N. Y.

INCINERATOR HOPPER AND SEAL.

Application filed June 3, 1927. Serial No. 196,192.

This invention relates to refuse disposal construction in the nature of those associated with incinerators, and more particularly to a refuse disposal construction including a hopper door and seal therefor.

In my application, S. N. 183,250 of April 13, 1927, I have described an improvement in refuse incinerator construction and hopper door therefor which has among its objects the solution of the disadvantages attendant to the loading of the hopper door of an incinerator flue, involving the creation of an undue draft upon the incinerator fire bed, induction of glowing particles of burning materials or sparks or dust or objectionable odors from burning refuse into the living room by providing a hopper or loading door for the incinerator or refuse disposal flue assuring a seal in all positions of the hopper door. The preferred construction shown in said application includes a relatively pivoted container provided with right angularly disposed walls, the edge of either one of which serves to engage an arcuately shaped wall to provide a seal in all positions of the hopper door. This hopper door is preferably so disposed as to be unbalanced, assuring self-closing upon release of the handle used for opening and closing the hopper door. Further the construction provided a hopper door chamber of limited size and correspondingly limited opening into which the refuse material may be deposited.

In the present improvement it is an object of my invention to provide a refuse disposal construction in the nature of an incinerator and a hopper or closure member for the flue thereof comprising a relatively pivotal loading door or container, so positioned in the flue opening, whereby in all positions in the loading and dumping of the flue opening, the flue opening will be sealed and the hopper door or container is further characterized by obtusely disposed walls providing a relatively large container into which refuse material may be deposited and coordinately resides in associating therewith an arcuately shaped wall adapted to engage one or both of the obtusely disposed walls to form a seal in all positions of the hopper door or closure member. My invention still further contemplates the provision of a relatively pivotal hopper door including obtusely disposed walls for providing a loading container and coordinately resides in the association therewith of an arcuately formed wall adapted to engage one or both of said walls to form a seal in all positions of the hopper door and still further characterized by said arcuately disposed wall providing an opening so enlarged as to facilitate the loading of a large quantity of refuse material into the flue opening.

A still further object of my invention resides in the provision of an incinerator construction including a hopper door or closure therefor in the nature of a loading container which may remain in an open position for the deposition of material therein, leaving the user's hands free during such loading operation, the hopper door being characterized by forming a seal for the flue opening in all positions thereof. Thus, my invention contemplates the provision of a hopper door which requires no counterpoise or unbalancing weights to automatically close the flue opening to comply with fire underwriter's requirements as the hopper door may be left in the loading or unloading position accidentally or purposefully for purposes of loading, leaving both hands of the operator free for this operation, at the same time providing a construction which at all times insures a seal of the flue opening of the incinerator.

Other objects of my invention reside in the provision of a construction including a hopper door relatively pivotally mounted, said hopper door including a compacting vane serving to force bulky material, such as paper, into the incinerator or flue opening without causing unsightly burning, said compacting vane further functioning as an auxiliary seal in various positions of the hopper door of the incinerator in loading or unloading the same.

A still further object of my invention resides in the provision of a relatively pivotal hopper door for an incinerator including angularly disposed walls, an edge of each one of which engages an arcuately disposed wall serving as a seal in all positions of the hopper door, the angularly disposed walls and the arcuate wall engaging the same being of unequal dimensions whereby the flue opening may be enlarged to any desired size.

Other objects of my invention reside in the provision of an incinerator construction and a hopper door therefor characterized by

low cost of production due to simplicity of construction, installation and adaptation to walls of various thicknesses and size.

To attain these objects and such further objects as may appear herein or be hereinafter referred to, I make reference to the accompanying drawing forming a part hereof, in which—

Figure 1 is a sectional view in side elevation of my device in the opened position.

Figure 2 is a view similar to that shown in Figure 1 in a partially closed position.

Figure 3 is a side elevation, partly broken away and in section, of my device in the closed position.

Figure 4 is a face view with parts broken away to show the interior construction.

Making reference to the drawing, it will be observed that my device may be applied to the wall 10, having an opening generally referred to as 11 connected with the flue or shaft and extending laterally into the interior of the room from which refuse matter, garbage, ashes or the like may be deposited to the flue leading downwardly into a storage device, incinerator or the like. The construction includes an opening frame 11 and an exterior face frame 13 connected to each other at the flanges 14 by screw members 15 or similar fastening means. The frame 13 is provided with an inwardly disposed lip 16 whose upper wall 17 is preferably rectangularly disposed to the plane of the frame 13 and whose lower wall 18 is preferably of greater length and is downwardly and angularly inclined. The side wall 19 of this lip is provided adjacent its lower wall with bearing lugs 20. Upon these bearing lugs I dispose a hopper door comprising a front wall 21 and a bottom wall 22, preferably making an obtuse angle to each other, side walls 23 having an arcuate edge 24 serving to form a four walled container. The walls 21, 22 and 23 may be integrally cast or otherwise assembled from sheet metal. At the apex of the walls 21 and 22 and through the side walls 23 I provide a pair of pintle lugs 25 through which are passed bolts 26, engaging the bearing lugs 20, previously described, serving to pivotally mount the hopper door upon the side walls 19 of the lip of the frontal frame 13. Adjacent the edge of the front wall 21 and in line with the arcuate edge 24, I provide a vane 27, attached to the walls 21 and 23 respectively by downwardly disposed flanges 28, through which are passed rivets or similar fastening elements 29. The vane 27 is formed as a portion of an arc whose center is coincident with the axis passing through the pivot formed by the bolts 26 and whose radius is the distance between the axial line and the upper wall 17 of the lip 16. The frame 11 has its lower wall 12 downwardly inclined at an angle corresponding to the lower wall 18 of the lip 16, for purposes which will hereinafter appear as this description proceeds. The upper wall of the frame 12 is arcuately formed. Preferably the wall is formed with arc portions whose radii are of different lengths and in the construction shown, the frontal arcuate portion 30 is connected to the rearward arcuate portion 31 by the stepped connecting wall 32.

It is preferred that the frontal arcuate portion 30 have its radius of generation substantially the same as the radius of the arcuate vane 27 and the latter is disposed a slight distance from the edge wall 21 forming a lip engaging edge 33. The wall 22 is of a length so that its edge 22′ is substantially equivalent to the radius of the arc formed by the rearward wall 31.

For purposes of ready operation, the frontal wall 21 is provided with a convenient handle 34. In the position shown in Figure 1 the lower wall of the hopper door 22 has its outer edge 22′ in engagement with the stepped portion 32, preventing further outward movement. The wall 22 and its edge 22′ engaging the arcuate portion 31 forms a seal for the opening of the flue 11. In the position shown, the frontal wall 21, substantially horizontally disposed, the space between the vane 27 and the edge of the upper wall of the lip 17 provides an opening for depositing refuse material into the hopper door. It will be observed that no counter weights are necessary to hold the hopper door in the position shown in Figure 1 as the door is unbalanced by its weight and will remain in this position, facilitating the loading of material into the hopper door. At the completion of this operation, the door may be pivoted inwardly to the position shown in Figure 2. It will be observed that in this position the edge 22′ in engagement with the rearward arcuate wall 31 throughout its movement serves as a seal for the flue opening. In this position, which is shown with the edge 22′ at the extreme edge of the rearward arcuate portion 31, the edge of the vane 27 just begins to enter underneath the upper wall 17 of the lip 16. Continued inward pivotal movement serves to disengage the edge 22′ from contact with the arcuate wall 31. As this edge 22′ leaves the arcuate wall 31, the vane 27 will begin contact with the frontal arcuate wall portion 30. Continued movement inwardly will serve to close the hopper door and the extreme position will be reached when the bottom wall 22 of the hopper rests upon the angularly inclined wall of the frame 28. In this position, also, the lip engaging edge 33 will abut the upper wall of the lip 17, as shown more clearly in Figure 3.

It will further be observed that in the inward movement after the position shown in Figure 2, the vane 27 will serve to com-

pact any bulky material into the hopper door opening, aside from acting as a seal after the edge 22′ has left the rearward arcuate wall 31. When the hopper door is as shown in Figure 3, the material deposited therein will slide down the downwardly inclined position assumed by the bottom wall 22.

It will also be observed that with the vane 27 disposed as shown, the center of gravity of the hopper door is to the right of the axial line. Thus, when the hopper door has been unloaded it will tend to remain shut of its own weight.

It will also be observed that the wall 22 may be enlarged to any desired extent, in which event the rearward arcuate wall 31 has its radial distance disposed to correspond to this increased dimension. By this construction, not only is the capacity of the hopper door increased but the opening formed between the lower wall 22 and the edge of the rearwardly disposed arcuate wall 31 is correspondingly enlarged. In any event, as the radius of the rearward arcuate portion 31 is increased, the stepped connecting wall 32 serves as a stop or an abutment for the bottom wall 22, engaging its edge 22′.

It will be observed in general that I have provided a hopper door for an incinerator which is sealed in all positions of loading or unloading, including intermediate positions and that I do not require using counterweights to automatically close the same to comply with the fire underwriters requirement as the opening of the flue is sealed in all positions of the hopper door so that I may thereby be able to load the hopper door without holding the same open.

It will also be observed that by positioning the front and bottom walls of the hopper door at an obtuse angle, I am enabled to enlarge the capacity of the hopper door, combining therewith a defining wall outlining a container which not only serves as an auxiliary seal for the flue opening but additionally serves to compact bulky material into the flue opening when closing the same.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is—

1. The combination with a flue wall having an opening, a frame fitted into the opening, said frame embodying a fulcrum and a back formed as two arcs of different radii concentric with the fulcrum, a hopper tiltingly mounted upon the fulcrum and having one side extending radially from the fulcrum into sliding engagement with one of the arcs, a plate carried by the other side of the hopper and curved complementary to and to slide in engagement with another of the arcs of the back.

2. The combination with a flue wall having an opening, a frame fitted into the opening, said frame embodying a fulcrum and a back formed as two arcs of different radii concentric with the fulcrum, a hopper tiltingly mounted upon the fulcrum and having one side extending radially from the fulcrum into sliding engagement with one of the arcs, a plate carried by the other side of the hopper and curved complementary to and to slide in engagement with another of the arcs of the back, said sliding side and plate being so proportioned that one shall be in sealing contact with one of the arcs at the back at all times.

3. The combination with a flue wall having an opening, a frame fitted into the opening, said frame embodying a fulcrum and back formed as arcs of different radii concentric with the fulcrum, a hopper tiltingly mounted upon the fulcrum and having one side extending radially from the fulcrum into sliding engagement with the arc of greater radius, a plate carried by the other side of the hopper and curved complementary to and to slide in engagement with the arc of lesser radius.

4. The combination with a flue wall having an opening, a frame fitted into the opening, said frame embodying a fulcrum and back formed as arcs of different radii concentric with the fulcrum, a hopper tiltingly mounted upon the fulcrum and having one side extending radially from the fulcrum into sliding engagement with the arc of greater radius, a plate carried by the other side of the hopper and curved complementary to and to slide in engagement with the arc of lesser radius, said sliding side and plate being so proportioned that one shall be in sealing contact with one of the arcs of the back at all times.

In witness whereof, I have hereunto signed my name this 23rd day of May, 1927.

HARRY H. HEYBECK.