

April 30, 1957

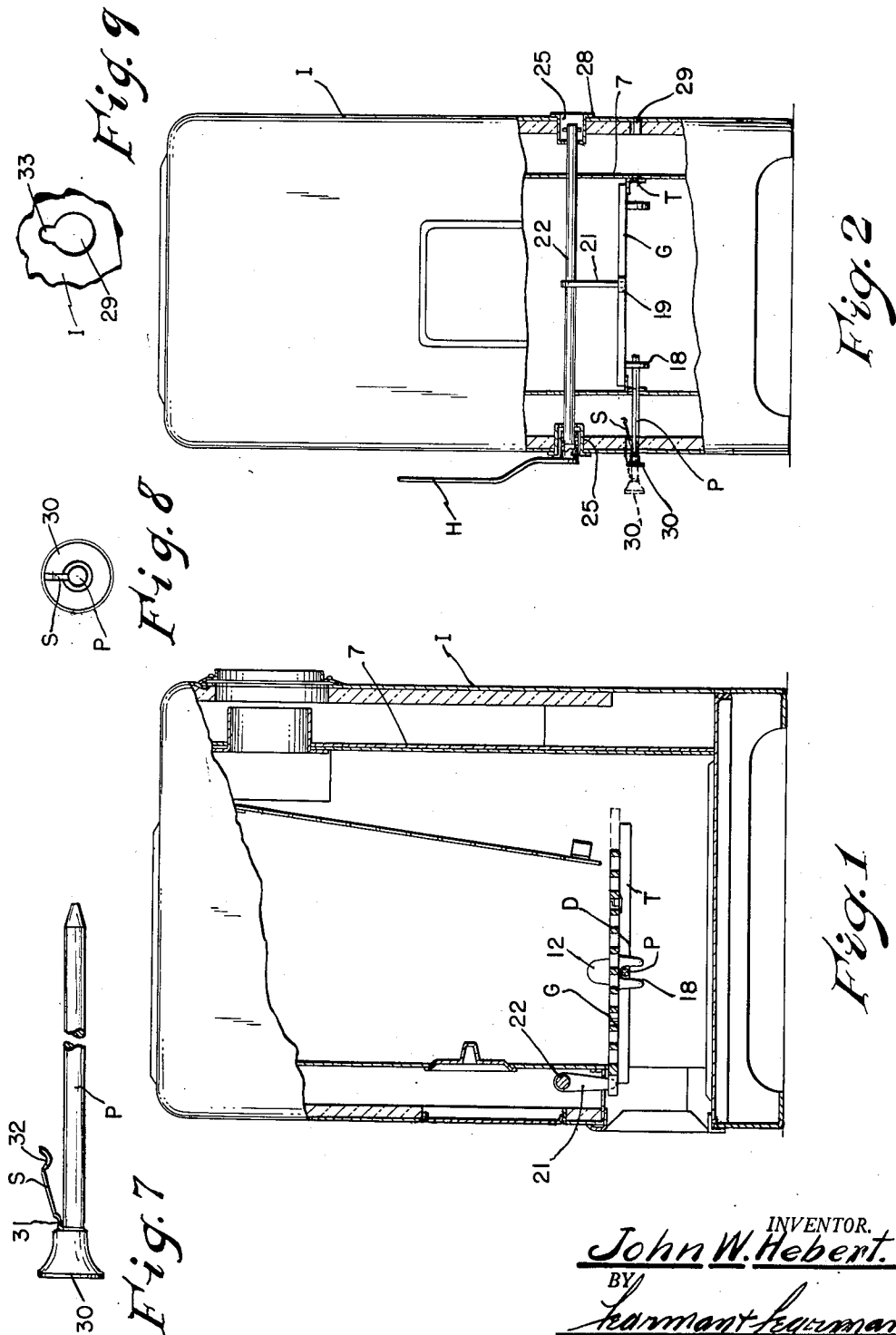
J. W. HEBERT

2,790,401

SECTIONAL DUMPING GRATE

Filed May 29, 1953

2 Sheets-Sheet 1



INVENTOR.
John W. Hebert.
BY
Leamont Leamont
ATTORNEYS

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J. W. HEBERT

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2 Sheets-Sheet 2

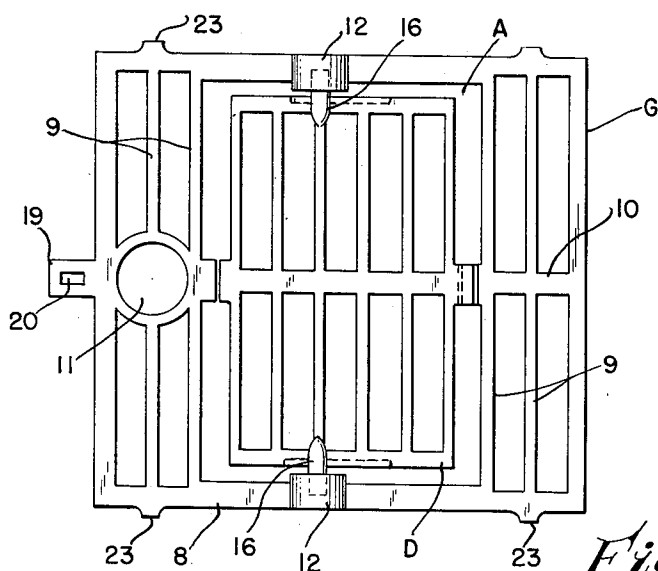


Fig. 3

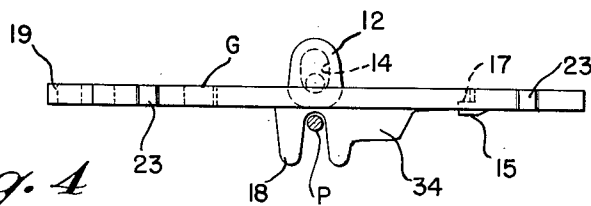


Fig. 4

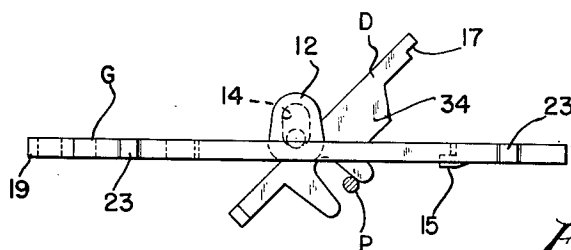


Fig. 5

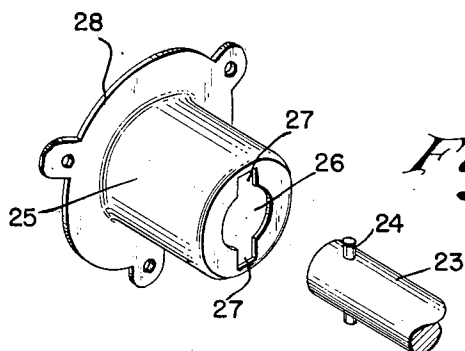


Fig. 6

INVENTOR.
John W. Hebert
BY
Harmon Harman
ATTORNEYS

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2,790,401

SECTIONAL DUMPING GRATE

John W. Hebert, Bay City, Mich., assignor to Calcinator Corporation, Bay City, Mich.

Application May 29, 1953, Serial No. 358,476

8 Claims. (Cl. 110—18)

This invention relates to grates for incinerators and more particularly to a sectional grate capable of dumping action as it is being reciprocated.

One of the prime objects of the invention is to design a horizontally disposed grate having a pivoted dumping section, and provide means whereby the pivoted section may be dumped to discharge non-combustible matter as the main grate is horizontally reciprocated to clean ash therefrom.

Another object of the invention is to design a sectional grate of simple, practical and economical construction which can be readily manufactured and mounted.

A further object is to provide a sectional grate including a dumping section pivotally mounted off-center, intermediate the length thereof, and provide a manually actuated means selectively engageable with said pivoted section for tilting said section to dumping position as the grate is reciprocated.

A further object still is to design a sectional grate including both a main section and a pivoted section, together with manually adjustable means engageable with the pivoted section for dumping said section to clear it of cans, bottles, wire and other uncombustibles as the main grate section is being reciprocated.

Still a further object is to provide a shaft mounting associated with the grate and provide bearings in the casing from which the shaker shaft can be removed without removal or disassembly of the bearings or casing.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts, hereinafter more fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, proportion, and minor details of construction, without departing from the spirit, or sacrificing any of the advantages of the invention.

In the drawings:

Fig. 1 is a side elevational view of an incinerator with the side wall being broken away to show the grate and associated parts.

Fig. 2 is a sectional, front elevational view of the incinerator casing with the bearings, shaker shaft and engaging pin in position.

Fig. 3 is an enlarged, top plan view of my sectional grate.

Fig. 4 is an enlarged, edge elevational view of the grate.

Fig. 5 is a view similar to Fig. 4, the broken lines showing the pivoted grate section swung to dumping position.

Fig. 6 is a perspective view of one of the shaker shaft bearings.

Fig. 7 is an enlarged, side elevational view of one of the grate dumping pins.

Fig. 8 is an end elevational view thereof.

Fig. 9 is a fragmentary, side elevational view of the side wall of the casing showing the keyhole slot to accommodate the dumping pin.

Referring now more particularly to the drawings in which I have shown the preferred embodiment of my invention, the letter I indicates the insulated casing of a

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household incinerator for burning garbage, trash and other combustible wastes. The incinerator is preferably slightly rectangular in shape and is provided with horizontally disposed tracks T secured on the side walls of the inner casing 7 in any desired manner.

A sectional grate structure G is mounted for reciprocal sliding movement on tracks T, said grate comprising a rectangular-shaped main frame 8 formed with spaced-apart transversely disposed bars 9 spanning the frame 8 and a center bar 10 is cast integral therewith. An enlarged, circular opening 11 is formed adjacent the front edge of the grate G directly beneath the burner (not shown).

Bearing housings 12 are provided on the upper face of the main frame 8, and vertically slotted recesses 14 are formed in the inner face of each bearing and for a purpose to be presently described.

An open area A is provided in the grate frame 8 intermediate its length, and a forwardly projecting lug 15 is formed on the center bar 9, the upper face of the lug being disposed below the face of the grate and projects into the area A as shown. A dumping-grate section D is accommodated in the area A and is ribbed in substantially the same manner as is the main frame, and trunnions 16 are cast on the upper face of the dumping section and are rotatably mounted in the bearings 12 as shown. A stepped lug 17 is cast integral with the rear edge of the dumping section D and overlies the lug 15 to support the dumping section in horizontal alignment with the face of the main grate frame, and I wish to direct particular attention to the fact that this pivoted section normally lies flat with the face of the main grate and pivots only when connected for dumping action, as will be hereinafter fully described.

Downwardly projecting fingers 18 are cast on the lower face of the main frame 8 directly below the bearings 12, and form an open slot therebetween to accommodate a horizontally disposed, retractable dumping pin P for tripping the dumping section D when it is desired to clean the grate of bottles, wires and other non-combustible matter whenever the grate becomes clogged.

A forwardly projecting lug 19 is cast on the front edge of the grate G, and a slotted opening 20 is formed therein to accommodate the free end of a crank 21 which is mounted on a transversely disposed shaft 22, and bosses 23 are provided on the side edges of the main frame to minimize wear and friction.

The grate-actuating mechanism comprises the transversely disposed shaft 22 on which the crank 21 is mounted, and transversely disposed projecting pins 24 are provided in the shaft adjacent the ends thereof, the end sections of the shaft being revolvably mounted in the pressed bearings 25 (see Fig. 6 of the drawings). These bearings 24 are hollow as shown, the inner ends being formed with a bearing opening 26, and opposed slots 27 lead into said opening so that the shaft 22 with pins 24 may be inserted therein with the shaft rotatable in the bearing opening 26. The outer end of the bearing 25 is flanged as at 28 to fit in snug facial contact with the incinerator casing, and the opening in the bearing permits insertion of the shaker handle H for reciprocation of the grate to clean the ashes from the face thereof.

Keyhole slots 29 are provided in each side wall of the casing, and a pin P is adjustably mounted in one of said slots, said pin being formed with a head 30, and a spring S is mounted on the pin directly adjacent said head, with the free end spaced from and overhanging the body of the pin, loops 31 and 32 being formed intermediate the length of the spring. This spring is accommodated in the radially disposed section 33 of the slot 29, and when the pin is in retracted position, the loop 31 engages the marginal edge of the slot 29, and in this posi-

tion the pin P will be out of engagement with the grate, so that the grate is reciprocated as a one-piece unit, but when it is desired to pivotally actuate the center section to dump non-combustibles from the face thereof, the grate can be actuated as a dual purpose unit, combining two distinct movements simultaneously with the one unit. The operator merely depresses the spring S, forcing the pin inwardly until the tapered free end is disposed in the notch between the fingers 18, the depending flange 34 forming a continuation of the forked member 18, and when the grate is reciprocated, the center section D will be dumped as clearly shown in Fig. 5 of the drawings, and this dumping action will be repeated upon each stroke of the grate. To disengage, it is merely necessary to retract the pin to former position so that the loop 32 engages the wall of the casing, thus holding it in position.

The operation of the grate is as follows:

When it is desired to shake or reciprocate the grate in the conventional manner, i. e., back and forth, to shake the ash therefrom, the operator merely inserts the end of the shaker handle H in one of the bearings 25, so that it engages the end of the shaft 22 and the pin 24, and then by rocking the shaker handle, the entire grate will be reciprocated back and forth to dislodge all ash on the face thereof.

When the grate becomes clogged with cans, wire or other non-combustible material, it is then necessary to tilt the dumping section D simultaneously with the reciprocation of the grate to dump the non-combustibles; the shaker handle H is first pulled fully forward; the locking pin P is then pushed inwardly to engage between the fingers 18 with the loop 31 engaging the side wall of the casing and holding it in position, and the grate is then reciprocated in the conventional manner, and on each forward stroke of the grate, the dumping section will be tilted to position as clearly shown in Fig. 5 of the drawing. The shaking action should be continued until the face of the grate has been completely cleaned, after which the shaker handle is again pulled fully forward, the pin retracted so that the loop 32 engages the wall of the casing to prevent displacement of the pin, and the entire grate is now free for continued reciprocatory shaking action, but will not dump as the off-center mounting maintains it in horizontal position. The specific type bearing makes it possible to easily and quickly remove the shaft and crank when for any reason it is desired to replace, repair or change any portion of the grate or its actuating mechanism.

From the foregoing description, it will be obvious that I have perfected a very simple, practical and economical grate structure, which will have both a conventional reciprocatory shaking action and a dumping action and which can be selectively utilized for dumping whenever the grate surface becomes clogged with non-combustible material of a size which will not pass between the grate bars.

What I claim is:

1. In an incinerator, a housing, spaced-apart, parallel guides therein, a grate mounted for reciprocatory movement on said guides, means for reciprocating said grate, the said grate including a pair of relatively movable sections, one of which is pivotal relative to the other, a lug on said pivotal section and a pin transverse to the path of reciprocatory movement of said grate normally fixed with respect to the direction of reciprocatory movement of the grate, said pin being disposed normally out of the path of the grate and movable into the path of said lug in a plane which is offset to the pivotal axis of the pivotal section to tip said pivotal section when engaged by the lug during reciprocatory movement of the said grate.

2. The combination defined in claim 1 in which spring means engageable with said casing is provided to hold said pin in inner and outer positions.

3. The combination defined in claim 1 in which said

lug is bifurcated and said pin is aligned to extend between the bifurcated portions thereof.

4. In an incinerator, a housing, guides therein, a tip-pable grate mounted for reciprocatory travel on said guides, means for reciprocating said grate, cam means on said grate, and means fixed with respect to the direction of reciprocation of said grate and normally disposed out of the path of reciprocatory travel of said grate movable in a plane offset to the tipping axis of said grate into the path of said cam means to tip said grate when engaged by the said cam means during reciprocation of said grate.

5. In an incinerator, guide means therein, a sectional grate reciprocatory on said guide means including a main frame grate section, means for reciprocating said main section, a rockable section pivotally mounted on said main section, a depending lug provided on the lower face of the rockable section, and means independent of said means for reciprocating said main section and normally out of engagement with said rockable section movable into the path of thereof and held in a position to cause pivoting of said rockable section relative to said main section when said rockable section and last mentioned means come into engagement, said last mentioned means including a pin engageable with said lug and causing the rocking of said rockable section when the main grate is reciprocated.

6. In an incinerator having a casing, a sectional grate mounted for reciprocating movement therein comprising, a main frame, means for reciprocating said frame, a pivotally mounted dumping section in said main frame, cam means on said dumping section, and manually operable means normally disposed out of the path of reciprocation of said grate movable into the path of reciprocation of said cam means and held in a position to cause the swinging of said dumping section about its pivot points as the grate is actuated and said cam means engages said manually operable means.

7. The combination defined in claim 6 in which the dumping section is pivotally mounted, off-center, and a stop is provided on the main section engageable with the dumping section to limit downward movement of one end of said dumping section.

8. In an incinerator of the class described, a casing, a sectional grate mounted for substantially horizontal reciprocating movement therein comprising, a main frame section and a dumping section pivotally mounted off-center in the main frame section and rockable in a vertical plane, said dumping section having a cam thereon, means connected to said main frame section for reciprocating said main frame section, means disposed transversely to the path of reciprocating movement of said grate and out of the path thereof movable into the path of said dumping section and held in a position to rock it to dumping position when the main frame is actuated, said last mentioned means comprising a transversely adjustable pin against which said cam rides to rock said section when the grate is reciprocated, and means on said pin for releasably securing it in various position of adjustment.

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