July 18, 1939. W. J. GROTH 2,166,291

ASH TRAP

Filed July 21, 1937

Fig. 1.

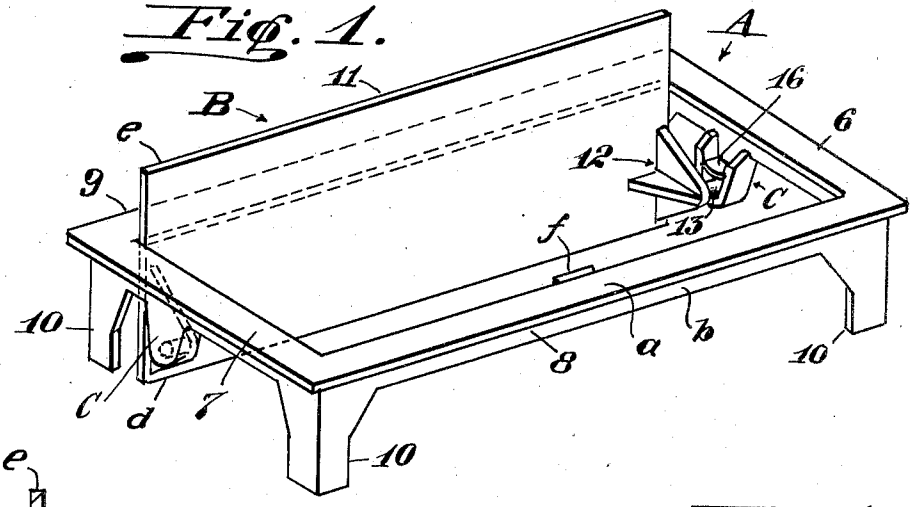


Fig. 2.

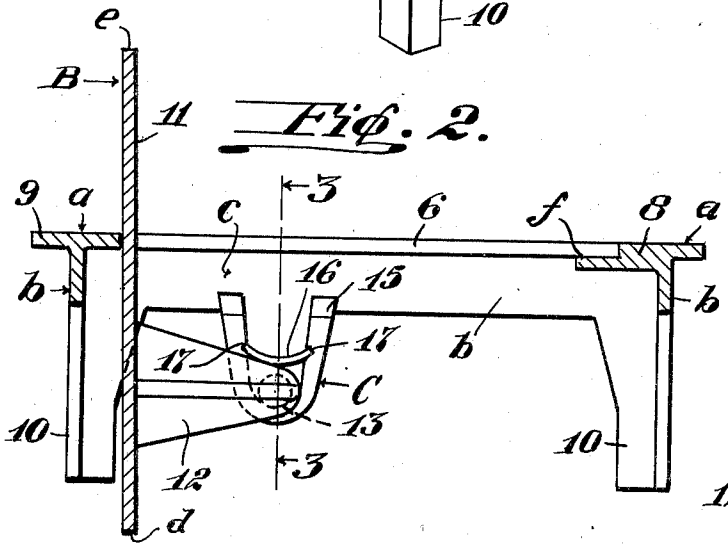


Fig. 3.

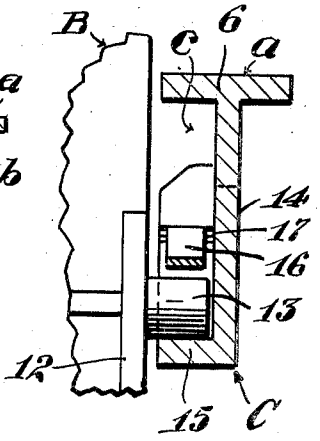


Fig. 4.

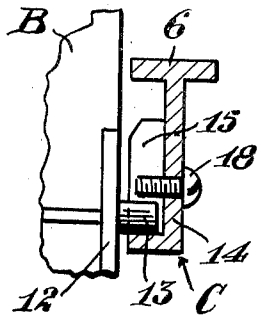
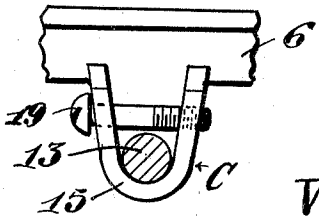


Fig. 5.



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ASH TRAP

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Application July 21, 1937, Serial No. 154,698

6 Claims. (Cl. 126—242)

This invention relates to an ash trap for fire places and more particularly pertains to ash traps of the character embodying a tiltable door for closing an ash discharge opening adapted to be swung to a vertically extending open position to permit delivery of ashes downwardly through the opening. Heretofore it has been the practice in the construction of ash traps of the above character to pivot the door on its longitudinal axis or in close proximity thereto, with the result that when in its open position the door will be positioned mid-way of the width of the opening thus restricting the latter and rendering available only approximately one-half the opening on either side of the door for discharge of ashes.

The primary object of the present invention is to provide an ash trap in which a vertically swinging door is mounted and arranged so that when disposed in its open position the ash discharge opening will be substantially fully so as as to afford a maximum of discharge area with the door disposed vertically or nearly so when in its opened position, and with its upper edge projecting above the margin of the opening so as to be readily engageable with a poker or similar tool in effecting closing thereof and in which the door is so mounted that its lower portion when open will act as a weight to normally maintain the door in its open position.

Another object is to provide a construction in the pivotal mounting of the door so formed as to facilitate assemblage of the latter and embodying an effective means whereby the door will be held in place in its frame against accidental disengagement therefrom.

A further object is to provide an arrangement in the pivotal mounting of the door whereby clogging thereof with ashes such as might interfere with operation of the door is obviated.

Another object is to provide an ash trap in which the door is so mounted that when in its closed position will normally tend to remain closed and will offer resistance to easy opening thereof and whereby accidental opening of the door is obviated.

With the foregoing objects in view, together with such other objects and advantages as may subsequently appear, the invention is carried into effect as illustrated by way of example in the accompanying drawing in which:

Fig. 1 is a perspective view of the ash trap showing the door thereof in its open position;

Fig. 2 is a view in cross section of the ash trap showing the door thereof in its open position;

Fig. 3 is an enlarged detail in section as seen on the line 3—3 of Fig. 2 showing the preferred construction of the pivotal mounting of the door;

Fig. 4 is a view in section depicting another form of the pivotal mounting;

Fig. 5 is a detail in section and elevation illustrating a further form of the pivotal mounting.

Referring to the drawing more specifically A indicates generally a frame which is preferably rectangular and is here shown as embodying parallel end members 6 and 7 and parallel front and rear side members 8 and 9. The frame A is preferably formed of case metal with the members 6, 7, 8 and 9 of T-shaped cross section, that is, with a flat upper portion *a* from which extends a central downwardly projecting web *b*. The frame thus formed is provided at each of its corners with a leg 10 formed integral with the web *b*. The frame A is designed to be mounted in the floor of a fireplace to form the margin of an opening therein leading to an ash pit in a conventional manner; the frame being disposed with the upper surface *a* thereof substantially flush with the adjacent surfaces of the fire-place floor.

Pivotally mounted on the frame A is a vertically swinging door B which embodies a rectangular metallic plate 11 of a dimension to loosely conform at its margins with the inner margin of the upper portion *a* of the frame A, so that the plate 11 when positioned to extend on a plane with the upper portion of the frame will effect closure of the opening bounded by the latter.

Projecting from opposite end portions of the door B are parallel brackets 12 each of which is fitted with a cylindrical trunnion 13; the pair of trunnions thus provided being disposed in horizontal axial alignment with each other and projecting from the brackets 12 beyond the opposed end margins of the door B.

In carrying out the present invention the brackets 12 and trunnions 13 are positioned to one side of the longitudinal center of the door B so that the axes of the trunnions 13 will be disposed on a plane perpendicular to the door off-set laterally from the longitudinal center of the door and spaced inwardly from the adjacent rear margin of the door.

Formed on each of the end members 6 and 7 of the frame A is a downwardly projecting stirrup C which protrudes below the web *b*; the pair of stirrups being designed to receive the trunnions 13 and to afford a pivotal support for the door B. Each of the stirrups C embodies a back wall 14 formed in continuation of the web *b* and a U-shaped side wall 15 which projects inwardly

from the back wall **14** toward the interior of the frame with the upper ends of the side members thereof terminating below and in spaced relation to the top portion of the frame to form gaps *c* through which the trunnions **13** may be passed laterally to effect positioning of the trunnions in the stirrups and to seat the trunnions on the connecting end portions of the wall **15**. The inner margins of the walls **15** are formed to extend on a plane with the inner margins of the end rails **6** and **7**.

The stirrups C are positioned so that their centers will be disposed on a plane rearward of the longitudinal center of the frame A and with the centers of the stirrups spaced forwardly from the plane of the inner margin of the rear frame member **9** a distance substantially corresponding to the distance between the rear margin of the door B and a perpendicular plane projecting from the latter through the axes of the trunnions **13**. The stirrups C extend downwardly from the frame such distance that the axes of the trunnions **13** seated thereon will be spaced from the top of the frame A a distance corresponding to the spacing of such axes from the upper or outer face of the door B.

By this arrangement when the door B is swung to its rearward open position as shown in Figs. 1 and 2 it will come to rest in a substantially vertical position abutting against the forward edge of the rear side member **9** of the frame A with the rear edge *d* and the major portion of the door extending below the frame and with the then upper portion and forward edge *e* of the door extending above the frame in position for ready engagement by a poker, tongs, or other means, employed in engaging the door to effect upward and forward swinging thereof to its closed position; the door when closed being positioned with its upper or outer face substantially flush with the flat upper surface *a* of the door frame and with the margin of the door encompassed by the inner margins of the members **6**, **7**, **8** and **9** of the frame. A lug *f* is formed on the inner margin of the front member **8** of the frame to project therefrom below the upper surface *a* and which lug is adapted to project under and form a seat for the forward edge of the door when the latter is in its closed position.

It will be noted that by reason of the axis of the pivotal mounting of the door being spaced rearwardly of the longitudinal center thereof and forwardly of its rear edge *d* a major portion of the door will extend forwardly of the vertical plane extending through the axis of the trunnions **13** whereby the door will be off balance in its closed position with the over-weight on its forward portion acting to oppose opening of the door, thus having an advantage substantially such as is attained by hinging a door to a frame at its rear margin, but with the added advantage that by reason of the pivotal mounting of the door being spaced forwardly from its rear margin *d* so that the rear marginal portion of the door when in its closed position will extend rearwardly of the vertical plane extending through the axis of the trunnions **13** such that on pressing downwardly on such marginal portion, as by means of a poker, the door may be swung to its open position.

Means are provided for holding the trunnions **13** against accidental disengagement from the stirrups C which may be of various constructions but preferably comprises a plate **16** of spring metal having its ends engaged in notches **17** formed on the inner faces of the plate **15** as shown in Figs. 1, 2 and 3; the plate being sprung as by bowing it from a flat normal position so as to place it under tension when engaged with the notches **17**, whereby the plate will be securely but removably held in place. The plate **16** is thus positioned to extend over the trunnion **13** and while serving the purpose of preventing accidental disengagement of the latter will also act as a shield to protect the bearing against excessive accumulation of ashes therein.

In the construction shown in Fig. 4 a screw **18** is threaded through the plate **14** to project above the trunnions **13** to retain the latter in place, while in the construction shown in Fig. 5 a screw **19** is passed through an opening in one side of the U-shaped wall **15** and screwed into engagement with the other side thereof to position the screw to extend across the stirrup above the trunnions **13** to hold the latter in place.

The operation of the invention is apparent from the foregoing, it being manifest that the door B may be readily swung to and from its closed position and that when in its open position the entire area bounded by the frame A will be unobstructedly open for the passage of ashes therethrough except as to the space occupied by the thickness of the door abutting against the rear frame member **9** and the slight projection afforded by the lug *f*.

I claim:

1. In an ash trap for fireplaces, a door, a bracket projecting from one side of said door adjacent each end thereof, a trunnion on each of said brackets, said trunnions extending in horizontal axial alignment with each other and protruding beyond the ends of the door with the axes of said trunnions disposed on planes spaced equi-distant outwardly from the door and inwardly from the rear margin thereof, a horizontal frame having end members and front and rear side members, stirrups extending downwardly from said end members in which said trunnions are pivotally supported; said stirrups being positioned to dispose the axis of said trunnions on a plane spaced downwardly from said frame and on a plane spaced forwardly from the rear frame member corresponding to the aforesaid spacing of said axes relative to the face and rear edge of said door so that on swinging the door to its open position it will abut the rear side member of said frame in an upright position.

2. In an ash trap for fireplaces, a door, a bracket projecting from one side of said door adjacent each end thereof, a trunnion on each of said brackets, said trunnions extending in axial alignment with each other and protruding beyond the ends of the door with the axes of said trunnions disposed on planes spaced outwardly from the door and inwardly from the rear margin thereof, a horizontal frame having end members and front and rear side members, stirrups extending downwardly from said end members in which said trunnions are pivotally supported; said stirrups being positioned to dispose the axis of said trunnions on a plane spaced downwardly from said frame and on a plane spaced forwardly from the rear frame member corresponding to the aforesaid spacing of said axes relative to the face and rear edge of said door, said stirrups having U-shaped side walls formed with grooves, and plates engaging said grooves overlying said trunnions to retain the latter in place in said stirrups.

3. In an ash trap for fireplaces, a horizontal

frame having end members and front and rear side members, a door having margins conformable to the inner margin of said frame, and a pivotal connection between said door and frame having a horizontal axis extending on planes spaced substantially equi-distant from the face and from the rear edge of said door and correspondingly spaced below and forwardly from the rear frame member whereby on swinging said door to an open position on said pivotal connection it will assume a substantially vertical position against said rear frame member to effect substantially complete opening of said trap as defined by said frame.

4. In an ash trap for fireplaces, a horizontal frame having end members and front and rear side members, a door having margins conformable to the inner margin of said frame, and a pivotal connection between said door and frame having a horizontal axis extending on planes spaced substantially equi-distant from the face and from the rear edge of said door and correspondingly spaced below and forwardly from the rear frame member whereby on swinging said door to an open position on said pivotal connection it will assume a substantially vertical position against said rear frame member and said axis being disposed on a plane perpendicular to the door intermediate the longitudinal center of the door and the rear margin thereof so that the trap will be substantially fully opened as defined by said frame when the door is in its substantially vertical position with the forward edge of the door extending above the frame and with a major portion of the door extending below the frame.

5. In an ash trap for fireplaces, a horizontal rectangular frame including end members and front and rear side members, a door having margins conformable to the inner margin of said frame, and a pivotal connection between said door and frame including horizontally extending trunnions and U-shaped stirrups in which said trunnions are supported; said trunnions being arranged with their axes below said frame and forward of the rear edge thereof and spaced from the face of said door on a plane correspondingly spaced from the rear edge of the door.

6. In an ash trap for fireplaces, a door, a bracket projecting from one side of said door adjacent each end thereof, a trunnion on each of said brackets, said trunnions extending in axial alignment with each other and protruding beyond the ends of the door with the axes of said trunnions disposed on planes spaced outwardly from the door and inwardly from the rear margin thereof, a horizontal frame having end members and front and rear side members, stirrups extending downwardly from said end members in which said trunnions are pivotally supported; said stirrups being positioned to dispose the axis of said trunnions on a plane spaced downwardly from said frame and on a plane spaced forwardly from the rear frame member corresponding to the aforesaid spacing of said axes relative to the face and rear edge of said door; said stirrups being formed with U-shaped side walls arranged to receive said trunnions between their upper ends, and means on said stirrups for holding said trunnions in place.

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