Nov. 30, 1937. C. F. BOWE 2,100,937

ASH REMOVER

Filed Nov. 10, 1936

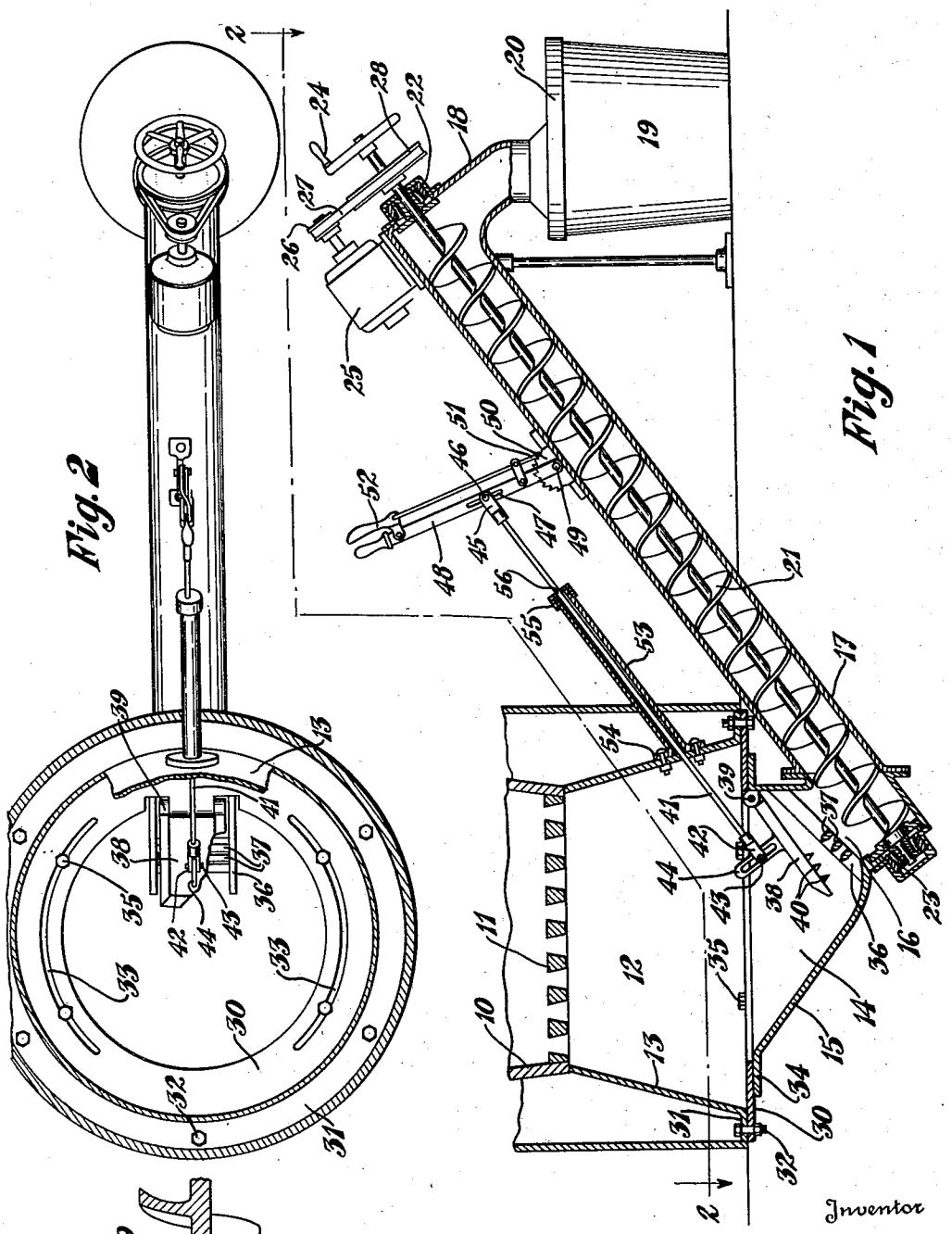


Fig. 1

Fig. 2

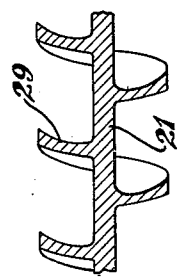


Fig. 3

Inventor

Charles F. Bowe

By Frease and Bishop

Attorneys

Patented Nov. 30, 1937 2,100,937

UNITED STATES PATENT OFFICE

2,100,937

ASH REMOVER

Charles F. Bowe, Canton, Ohio, assignor of twenty-two and one-half per cent to Elmer George Baird, Canton, and twenty-two and one-half per cent to Charles W. Traynor, Massillon, Ohio

Application November 10, 1936, Serial No. 110,089

5 Claims. (Cl. 110—165)

The invention relates to apparatus for removing ashes from beneath the grates of furnaces and the like.

The object of the invention is to provide means for removing the ashes from the usual ash pit located beneath the grate of a furnace.

A further object is to provide an ash remover in which an auxiliary or sub-ash pit is located below the ordinary ash pit of the furnace and communicates with the underside thereof, an inclined screw conveyer being extended into this auxiliary ash pit for removing the ashes, the auxiliary ash pit being tapered toward the screw conveyer so as to convey all of the ashes from the furnace.

A further object is to provide a crusher within the auxiliary ash pit to crush any clinkers or the like to such size that they may be conveyed out by means of the screw conveyer. Another object is to provide a concave thread upon the conveyer screw for more readily conveying the ashes.

A still further object is to provide a ring for connecting the auxiliary or sub-ash pit to the ordinary ash pit of the furnace whereby the auxiliary ash pit may be easily connected to furnaces of various diameters.

The above objects together with others which will be apparent from the drawing and following description, or which may be later referred to, may be attained by constructing the improved ash remover in the manner illustrated in the accompanying drawing, in which

Figure 1 is a vertical longitudinal section through an ash remover embodying the invention;

Fig. 2, a plan sectional view of the ash remover taken substantially on the line 2—2 Fig. 1; and

Fig. 3, a detail sectional view of a portion of the improved conveyer screw.

Similar numerals refer to similar parts throughout the drawing.

A portion of the fire pot of an ordinary furnace is indicated generally at 10 and the grate bars are shown at 11 mounted above the usual ash pit 12 formed within the walls 13, all as in usual and ordinary practice.

Located below the floor level and directly beneath the ash pit 12 is an auxiliary or sub-ash pit 14, the walls 15 of which converge toward the opening 16 so that all of the ashes will be directed toward said opening.

Communicating at its lower end with the opening 16 of the auxiliary ash pit is an upwardly inclined feed tube 17 extending above the floor level and having at its upper end a downwardly inclined discharge spout 18 through which the ashes are discharged into the ash can 19, the discharge spout fitting into a suitable opening in the lid 20 of the can so as to prevent liberation of lighter particles of the ashes.

A conveyer screw 21 is mounted within the feed tube 17, the upper and lower ends thereof being preferably journaled in roller bearings as indicated at 22 and 23 respectively. The lower portion of the conveyer screw is located immediately below the opening 16 of the auxiliary ash pit so that the falling ashes come into contact with said screw.

The screw 21 may be rotated by means of a hand crank 24 or if desired, it may be mechanically driven as by the motor 25 mounted in any suitable position as upon the upper end portion of the feed tube 17. A pulley 26 may be fixed upon the shaft of the motor 25 and connected as by the belt 27 to a pulley 28 fixed upon the upper end of the conveyer screw shaft.

The conveyer screw 21 is preferably provided with a concave thread as clearly shown at 29 in Fig. 3, so as to facilitate the conveying of the ashes upward through the feed tube 17.

For the purpose of connecting the shell forming the auxiliary ash pit 14 to the shell of the ordinary ash pit 12, a ring 30 is provided, this ring being connected to the annular flange 31 of the ordinary ash pit as by the bolts 32 and having slots 33 therein adapted to be connected to the annular flange 34 of the auxiliary ash pit as by bolts 35. The slots 33 permit adjustment of the auxiliary ash pit and feed tube 17 to any desired angle relative to the furnace.

It will be seen that with this construction the same size auxiliary ash pit may be connected to the ordinary ash pits of furnaces of various diameters by using a ring 30 of the necessary size.

For the purpose of crushing any clinkers, among the ashes, which might be of sufficient size to obstruct or clog the conveyer screw, a crushing device is provided within the auxiliary ash pit comprising a grid or grating 36 having a plurality of spaced bars 37, preferably tapered toward their upper edges, as shown in Fig. 1.

The cooperating portion of the crushing device includes a jaw or gate 38 hinged at one end to the wall of the auxiliary ash pit as at 39 and provided with teeth 40 adapted to cooperate with the bars 37 to crush and break up any clinkers which may be contained in the ashes.

This gate or jaw is adapted to be operated by the rod 41 having at its lower end a fork 42 connected as by the pin 43 to the slotted ear 44

upon the jaw or gate 38. The other end of the rod is provided with a fork 45 having a pin 46 located through the slot 47 in the operating lever 48 which is pivoted as at 49 upon a sector 50 mounted in any suitable manner as upon the feed tube 17. A pawl 51 operated as by a hand grip lever 52 upon the handle portion of the lever 48, is adapted to engage the teeth of the sector 50 to hold the lever in any desired position.

It should be understood that the jaw or gate 38 serves not only to break up clinkers but also controls the draft to the grates 11 and regulates the feed of ashes to the screw conveyer. A tubular guide 53 may be provided for the control rod 41, this guide having a flange 54 at its lower end by means of which it may be connected to the wall of the ash pit, the rod being mounted for reciprocation within said tubular guide. A cap 55 may be threaded or otherwise connected upon the upper end of the tubular guide and provided with a drilled aperture 56 through which the rod has a snug sliding fit.

I claim:

1. In combination with an ash pit of a furnace, an auxiliary ash pit mounted below said ash pit and provided with walls converging downwardly to a discharge opening, a feed tube communicating with said discharge opening, a conveyer in said feed tube, a grating at said discharge opening, and a movable gate cooperating with said grating for crushing clinkers in the ashes before they enter the feed tube.

2. In combination with an ash pit of a furnace, an auxiliary ash pit mounted below said ash pit and provided with walls converging downwardly to a discharge opening, a feed tube communicating with said discharge opening, a conveyer in said feed tube, a grating at said discharge opening, and a movable gate provided with a plurality of teeth cooperating with said grating for crushing clinkers in the ashes before they enter the feed tube.

3. In combination with an ash pit of a furnace, an auxiliary ash pit mounted below said ash pit and provided with walls converging downwardly to a discharge opening, a feed tube communicating with said discharge opening, a conveyer in said feed tube, a grating at said discharge opening, a movable gate cooperating with said grating for crushing clinkers in the ashes before they enter the feed tube, and means outside of the ash pit for operating said gate.

4. In combination with an ash pit of a furnace, an auxiliary ash pit mounted below said ash pit and provided with walls converging downwardly to a discharge opening, a feed tube communicating with said discharge opening, a conveyer in said feed tube, and a ring adjustably connecting the ash pit and the auxiliary ash pit whereby the feed tube may be located at any desired position around the ash pit.

5. In combination with an ash pit of a furnace, an auxiliary ash pit mounted below said ash pit and provided with walls converging downwardly to a discharge opening, a feed tube communicating with said discharge opening, a conveyer in said feed tube, a gate for controlling said discharge opening, a guide tube fixed to the exterior wall of the ash pit, and a control rod slidably located through said guide tube and operatively connected to said gate.

CHARLES F. BOWE.