May 30, 1933. W. E. PFEFFER 1,912,302

FIRE KINDLER

Filed Nov. 2, 1931

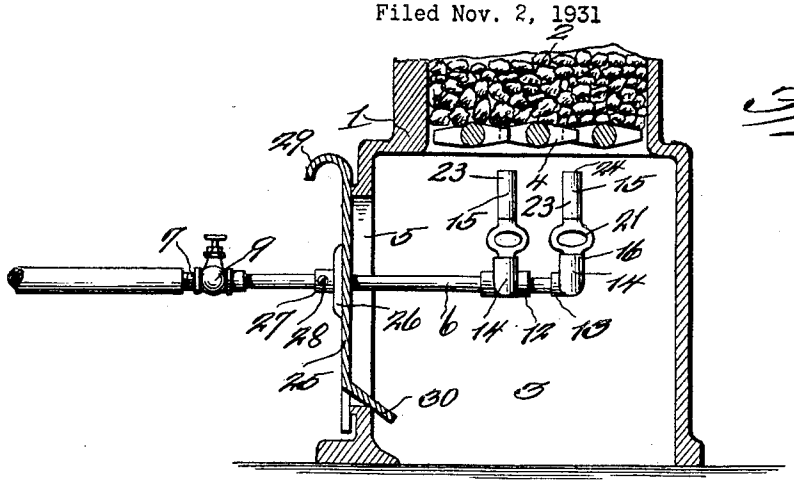


Fig. 1.

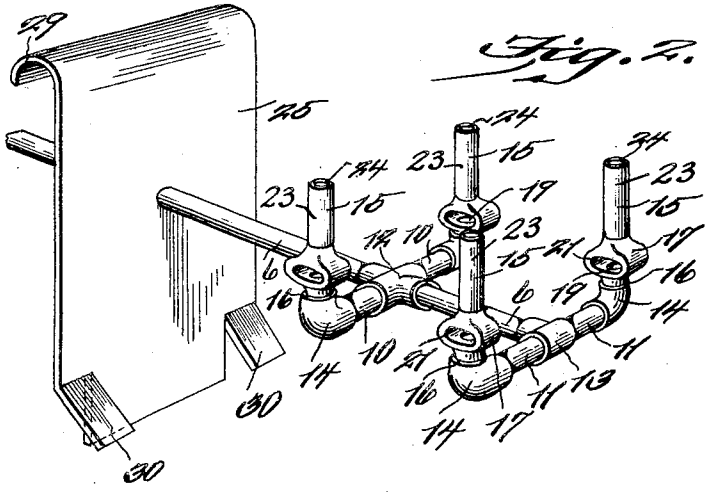


Fig. 2.

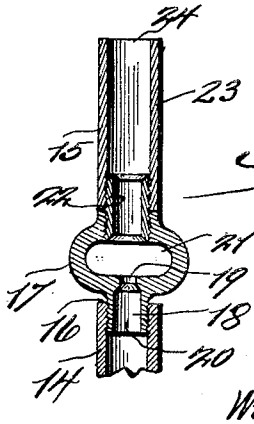


Fig. 3.

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UNITED STATES PATENT OFFICE

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FIRE KINDLER

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This invention relates to an improved device for lighting various coals in furnaces, and particularly those of the finer grade.

The essential purpose of the invention is to provide a device of this kind which is self-supporting within the ash pit below the grate and having connection with the usual gas line of a building, so that after lighting the burners of the device, the blue flame preferably tipped yellow will pass through the grate bars and thereby cause ignition of the coal bed. The device can also be used in connection with a fire, of which the coals have become substantially deadened, by first lighting the burners, and then placing same in the ash pit below the grate bars.

Another purpose is to provide a device having means to engage with the ash pit door opening, in order to render the igniter self-supporting as well as easily detachable.

A still further purpose is to provide an improved burner for use in connection with the igniter, comprising a body provided with opposite openings or rather a through passage transversely of the body, including a nipple, and a burner tube connected to the nipple, the construction and arrangement of the parts of the burner being such as to create a blue flame, one preferably tipped with yellow, as best results have been attained with this character of flame.

It is to be understood that the particulars herein given are in no way limitative, and that while still keeping within the scope of the invention, any desired modification of details and proportions may be made in the construction of the appliance according to circumstances.

The invention comprises further features and combination of parts to be hereinafter set forth, shown in the drawing and claimed.

In the drawing:—

Figure 1 is a view of a portion of a furnace, illustrating the ash pit thereof and the grate bars, and a portion of the fire bed, illustrating the improved coal igniter applied.

Figure 2 is a perspective view of the improved igniter, showing the means for rendering the same self-supporting in the ash pit.

Figure 3 is a vertical sectional view through one of the burners proper.

Referring to the drawing 1 identifies a portion of a furnace having a fire bed chamber 2 and an ash pit, there being the usual grate bars 4 located in the fire bed chamber.

Arranged in position in conjunction with the ash pit door opening 5 of the furnace is the igniter, which comprises a feed pipe 6 having a couple 7, to which a flexible metal tubing or hose 8 may be connected for supplying a supply of gas to the feed pipe 6. This couple has a conventional valve 9 for turning on and turning off of the gas. The gas may be derived from any suitable source, preferably from city service lines (not shown), and which passes through the feed pipe 6 and through the lateral branch pipes 10 and 11. The lateral branch pipes 10 are connected to the feed pipe 6 of a four way union 12, while the lateral pipes 11 are connected to the feed pipe 6 by a T 13. Connected to the extremities of the lateral pipes 10 and 11 are elbows 14, to which the burners 15 are connected as shown at 16. Each of the burners, as shown in Figure 3 comprises a body 17, which has a threaded extension 18 for engagement into the elbow 14. A contracted opening 19 connects the passage 20 of the extension 18 with a relatively large transverse opening 21 formed in the body 17 of the burner. This opening 21 permits of air to be drawn into the body from lateral directions for mixture with the gas supply passing across the opening 21. Threaded into the upper end of the body 17 is a nipple 22, to which the burner tubes proper 23 are connected. It is obvious that the body 17 of the burner and the nipple 22 as well as the burner tube 23 may be constructed in a solid formation, which will permit the burner to be cast, if it is so desired. The contracted opening 19 is substantially smaller in diameter than the passage through the center of the nipple and through the burner tube, and in passing create an entraining action on the air, which will mix with the gas and more or less volitalize the same,

and thereby produce the desired and proper combustion when ignited at the outlets 24 of the burner tubes. When ignited at the burner outlet openings 24 a blue flame, preferably yellow tipped will be created which will pass through the grate bars of the furnace, it being obvious that the burner tubes may be positioned so that the flames will pass through the transmission parts of the grate bars and thereby quickly ignite the coals of the fire bed.

In order to render the igniter self-supporting in the ash pit of the furnace, a sheet metal plate 25 is provided, which is disposed to cover the ash pit door opening 5 substantially. Spot welded or otherwise fastened at 26 to the outer face of the plate 25 is a collar 27, through which the feed pipe 6 passes, there being a set screw 28 engaged through the collar for engagement against the exterior surface of the feed pipe 6 for the purpose of holding the feed pipe in different adjusted positions through the plate 25. In this manner the igniter may be adjusted in position, so that the burner tubes proper may be positioned in order to direct the flames through the transmission parts of the grate bars. For instance some furnaces are larger in diameter than in others and by means of the adjustability of the feed pipe 6, the burner tubes may be positioned to direct the flames in the proper directions.

The upper part of the plate 25 is formed with a curved overhand piece 29, by which the support can be handled, for the purpose of arranging the igniter in its proper position. In order to insure rendering the igniter self-supporting, the lower edge portions of the plate 25 adjacent their opposite corners have lugs or ears 30 struck up from the plate and bent angularly laterally, for the purpose of engaging over the lower edge of the ash pit door opening 5, in a manner as shown in Figure 1 for supporting the igniter.

It is obvious that the burners located in the ash pit are more or less heavier than the outer end of the feed pipe 6, therefore the tendency of the burners proper to move downwardly, will cause a retention of the upper part of the plate 25 against the outer edge of the ash pit door, with the lugs or ears 30 engaged with the lower edge of the ash pit door opening, the lugs or ears cooperate with the lower part of the plate which engages on the outer edge at the lower portion of the ash pit door opening, to insure holding the supporter 25 in position, and thereby balance the igniter in position.

The invention having been set forth, what is claimed is:

1. As an article of manufacture, an igniter for coals in the fire box of furnaces, including a feed pipe extending into the ash pit and provided with burners on its inner end adapted to be located in the ash pit, a supporter for closing the ash pit door opening substantially and engaging the outer marginal edge of said opening, said supporter having means for engaging the edge of the ash pit door opening, whereby the igniter is balanced in position with the supporter engaging the exterior surface of the opening.

2. In an igniter for coals in the fire box of furnaces, the combination with a feed pipe adapted to extend into an ash pit of the furnace and having burners at its inner end for directing a flame through grate bars of the furnace, of a supporter comprising a plate to engage against and exteriorly of an ash pit door opening of said furnace and having means for adjustably supporting the feed pipe in the plate, said plate having means cooperative with the marginal edge of the ash pit door opening, whereby the igniter is rendered self-supporting and detachable.

3. In an igniting burner for coals in a fire box of a furnace, the combination with a gas feed pipe extending into an ash pit of said furnace provided with burners at its inner end, of a supporter comprising a plate substantially closing an ash pit door opening of the furnace, means for supporting the feed pipe through the plate, and means struck up from the plate and engaging inwardly of and at the bottom of the ash pit door opening for balancing the feed pipe and the burners self-supporting in position.

4. In an igniting burner for coals in a fire box of a furnace, the combination with a feed pipe extending into an ash pit of said furnace and carrying burners at its inner end, of a supporter comprising a plate engaging with the marginal outer edge of the ash pit door opening and closing the latter substantially, the feed pipe passing through the plate, and lugs carried by the lower portion of the plate and engaging inwardly of the ash pit door opening at its lower edge for balancing the feed pipe and the burners self-supporting in position.

5. In an igniting burner for coals in a fire box of a furnace, the combination with a feed pipe extending into an ash pit of said furnace and having burners at its inner end, of means for substantially closing an ash pit door opening of said furnace, said means supporting the feed pipe and including elements cooperative with the marginal edge of the ash pit door opening for rendering the igniting burner self-supporting and balanced in position.

In testimony whereof I affix my signature.

WILLIAM EMIL PFEFFER.