

UNITED STATES PATENT OFFICE

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HOT-AIR FURNACE

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This invention relates to furnaces and has special reference to furnaces of a type using solid fuels.

5 An object of the invention is to provide an improved furnace of the warm air circulation type having a fire pot mounted for rocking movements within an enclosing drum or case provided with one or more feed openings, and means for turning the fire pot to
10 and from position to receive fuel or other materials or substances from said openings.

Another object of the invention is to provide a furnace of the type and character mentioned provided with a rocking fire pot supported within an enclosure and having a
15 grate at one end and an opening at the opposite end, in combination with means forming a fuel inlet passage and means for turning the fire pot to one position in which it will receive fuel, and for turning the fire
20 pot to another position in which the products of combustion are discharged vertically from said opening.

25 Another object of the invention is to provide a furnace having a rocking fire pot provided with an opening in its upper side for discharging the products of combustion, in combination with means forming an enclosure for said fire pot and having a passage
30 therethrough for conducting ashes, etc., toward the fire pot, and means for rocking the fire pot to a position in which ashes from said passage will be discharged through said opening into the fire pot to bank the fire and
35 for turning the fire pot to another position in which the products of combustion will be discharged through said opening to an appropriate outlet or flue.

40 Another object of the invention is to provide an improved furnace having a rocking fire pot provided with an opening in one side in combination with means forming a fuel inlet passage and means forming a pas-
45 sage for ashes or slack or the like, and means for rocking the fire pot optionally to positions to receive through said opening fuel from said first passage, or ashes, etc., from
said second passage, as desired.

50 Other objects will appear from the fol-

lowing description, reference being made to the accompanying drawings in which—

Fig. 1 is a vertical front to rear sectional view of my improved furnace, showing the fire pot in an upright position.

Fig. 2 is a vertical sectional view of the furnace showing the fire pot turned to a horizontal position.

Fig. 3 is an enlarged detailed view of the latch device capable of satisfactory use in the invention.

In the embodiment of the invention shown, the furnace comprises an outer shell or case 1 having an air inlet passage 2 opening into the lower end thereof and having a number
65 of air circulation passages 3 opening from its upper end. The pipes 3 lead to the rooms into which the warm air is to be discharged.

Within the lower end of the shell or case 1 an ash receptacle is formed by a series of
70 approximately vertical walls 4 seated upon a bottom wall 5, and a top wall 6 having therethrough an opening 7. This ash receptacle opens through the front of the shell or case 1 and is provided with a hinged
75 door 8, which may be opened to permit access to the inside of the ash receptacle or to permit air to pass to the fire pot.

An enclosure and support for the fire pot is mounted and supported upon the ash receptacle and is approximately spherical in form. As shown, this enclosure and support for the fire pot comprises a lower section 9 seated and supported on the wall 6 and having
80 interlocking engagement 10 therewith. The lower side of the section 9 has an opening therethrough to permit the ashes and solid products of combustion to drop into the ash receptacle and to permit air to pass upwardly
85 into contact with the burning fuel. The intermediate section 11 of the enclosure and support for the fire pot is seated upon the upper edge of the section 9 and secured thereto by fasteners 12. The intermediate section
90 11 has through one side thereof a passage 13 surrounded by a wall 14 projecting outwardly through an opening in the shell or case 1 and forming a fuel inlet passage through which fuel is delivered into the furnace. The outer end of this inlet passage
100

is opened and closed by a hinged door 14^a. The upper section 15 of the enclosure and support for the fire pot is seated upon the upper edge of the intermediate section 11 and has through its upper end an opening 16 forming a discharge passage for the smoke and fumes. The section 15 has through one side thereof an opening 17 surrounded by the wall 18 projecting upwardly at an incline and forming a passage for conducting ashes or slack or the like into the fire pot. The wall 18 projects through the shell or case 1 above the passage 14 and is controlled by the hinged door 19 which may be opened or closed as desired.

A drum 20 is seated and supported upon the section 15 and is designed and arranged to receive the smoke and fumes discharged thereto through the opening 16 and to conduct the smoke and fumes to the discharge outlet 21.

The fire pot of my improved furnace is approximately oval in side elevation and, as shown, is made of two duplicate sections 22 secured together by fasteners 23 so as to provide an enclosure having at its upper end an opening 24 and at its lower end an opening 25. The lower end of the fire pot has an internal flange 26 on which the grate 27 is supported. A number of projections 28 are rigid with the wall sections 22 and engage over the marginal edges of the grate 27 and hold the grate from tilting or from sliding out of position when the fire pot is rocked. The wall of the fire pot above the grate has a series of longitudinal slots 29 which admit air and permit ashes and other products of combustion to drop from the fire pot. Each of the wall sections 22 has projecting therefrom an axial lug 30. The lugs 30 are in axial alinement and are seated in bearings 31 projecting inwardly from the section 11 about ninety degrees around from the passage 13.

A stem 32 projects through an appropriate fitting 33 mounted on the shell or case 1 and has a polygonal inner end engaging in a similarly shaped hole in one of the axial members 30. A lever 34 is attached to the outer end of the stem 32 and constitutes means whereby the fire pot may be turned to place the opening 24 opposite the fuel supply passage 13, or opposite the passage 18, or opposite the opening 16, as desired.

A latch detent 35 of familiar construction and operation may be mounted in connection with the lever 34 for engagement in recesses 36 in the fitting 33 to hold the fire pot in its different adjusted positions.

When fuel is delivered into the fire pot the lever 34 is operated to turn the fire pot to position in which the opening 24 is in line with the passage 13. The grate will be held from displacement by the projections 18. The desired amount of fuel may then be thrown into the fire pot, after which the lever 34 is oper-

ated to turn the fire pot to its upright position in which the grate is at the lower end and the opening 24 is at the upper end.

When it is desired to bank the furnace to retard combustion the lever 34 may be operated to turn the fire pot to position to receive ashes or slack from the passage 18. The fire pot may be left in that position or may then be turned to the upright position shown.

When fuel is delivered into the fire pot in the manner described, the fresh fuel is, for the most part, covered by the burning fuel and live coals when the fire pot is turned to its upright position. That this will occur is apparent from an inspection of the drawings. Moreover, these movements of the fire pot are sufficient to cause ashes and other waste materials to drop from the first pot into the ash receptacle.

It is clear that my invention obtains all of its intended purposes in a highly efficient and satisfactory manner. The construction and arrangement of the device may be varied within equivalent limits without departure from the nature and principle of the invention. I do not restrict myself unessentially but what I claim and desire to secure by Letters Patent is:

1. A furnace comprising an enclosure having an opening at its lower end for the admission of air and the discharge of solid products of combustion and having an opening at its upper end for the discharge of smoke and fumes of combustion, means forming a fuel inlet passage at one side of said enclosure, an approximately oval fire pot supported in a horizontal axis in said enclosure and having an opening at its upper end, a grate forming a fuel support at the lower end of said fire pot, and means for turning said fire pot to place said opening in line with said fuel inlet passage to receive fuel and in line with said opening at the upper end of said enclosure to discharge smoke and fumes of combustion.

2. A furnace comprising an enclosure having openings in its upper and lower ends and also having a fuel inlet opening at one side, a fire pot supported for turning movements on a horizontal axis in said enclosure and having openings at its upper and lower ends, a grate across the opening at the lower end of said fire pot for supporting fuel in said fire pot, and means for turning said fire pot from position in which said openings in said fire pot are in line with said openings in the upper and lower ends of said enclosure to position in which the opening at the upper end of said fire pot is in line with said fuel inlet openings.

3. A furnace comprising an enclosure having openings at its upper and lower ends and also having a fuel inlet opening at one side and also having an opening above the fuel inlet opening at below the opening at the upper

- end of said enclosure, a fire pot supported for turning movements on a horizontal axis in said enclosure and having an opening at its upper end and a grate at its lower end for supporting fuel in said fire pot, and means for turning said fire pot to position in which said opening at the upper end of said fire pot is in line with the opening at the upper end of said enclosure or said fuel inlet opening or with said last named opening in said enclosure, as desired.
4. A furnace comprising an enclosure having openings at its upper and lower ends and also having a fuel inlet opening at one side, a fire pot supported for turning movements on a horizontal axis in said enclosure and having an opening at its upper end, a grate supported by said fire pot for supporting fuel in said fire pot, and means for turning said fire pot from position in which said opening at the upper end of said fire pot is in line with the opening at the upper end of said enclosure or in line with said fuel inlet opening, as desired.
5. A furnace comprising an enclosure having openings at its upper and lower ends and also having a fuel inlet opening at one side, a fire pot supported for turning movements on a horizontal axis in said enclosure and having an opening at its upper end, a grate supported by said fire pot for supporting fuel in said fire pot, means for turning said fire pot from position in which said opening at the upper end of said fire pot is in line with the opening at the upper end of said enclosure, or in line with said fuel inlet opening, as desired, and a device in connection with said means for preventing said fire pot from turning accidentally from either of said positions.
6. A furnace comprising an enclosure having an opening in its upper end and having a fuel inlet opening at one side, a fire pot supported for turning movements on a horizontal axis in said enclosure and having an inlet opening at its upper end, means for admitting air into said enclosure and into said fire pot, and means for turning said fire pot to place said opening at the upper end of said fire pot in line with said opening at the upper end of said enclosure or in line with said fuel inlet opening, as desired.
7. A furnace comprising an enclosure having an opening in its upper end and having a fuel inlet opening at one side and having a banking material opening above said fuel inlet opening, a fire pot supported for turning movements on a horizontal axis in said enclosure and having an opening at its upper end, means for supporting fuel in said fire pot, means for admitting air into said enclosure and to said fire pot, and means for turning said fire pot to position in which said opening at the upper end of said fire pot is in line with either of said openings in said enclosure.
8. A furnace comprising an enclosure having an opening in its upper end and having a fuel inlet opening at one side and having a banking material opening above said fuel inlet opening, a fire pot supported for turning movements on a horizontal axis in said enclosure and having an opening at its upper end, means for supporting fuel in said fire pot, means for admitting air into said enclosure and to said fire pot, means for turning said fire pot to position in which said opening at the upper end of said fire pot is in line with either of said openings in said enclosure, and a device in connection with said means for preventing said fire pot from turning accidentally from either of said positions.

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