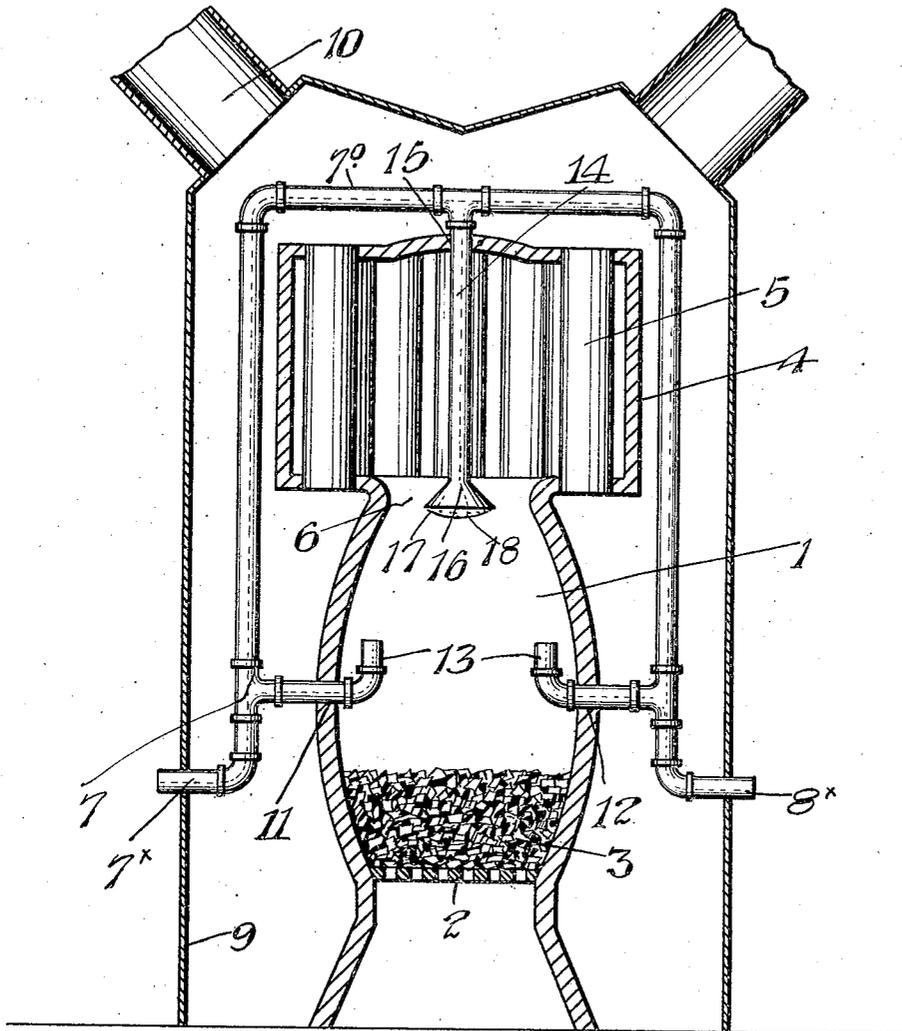


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1,446,931.

G. RUTHERFORD.
FURNACE.
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UNITED STATES PATENT OFFICE.

GEORGE RUTHERFORD, OF LONDON, ONTARIO, CANADA.

FURNACE.

Application filed August 13, 1921. Serial No. 492,089.

To all whom it may concern:

Be it known that I, GEORGE RUTHERFORD, a subject of the King of Great Britain, and a resident of the city of London, in the county of Middlesex, Province of Ontario, Canada, have invented certain new and useful Improvements in Furnaces, of which the following is the specification.

My invention relates to improvements in furnaces and the object of the invention is to devise a secondary combustion device by which air is very efficiently mixed with the hot gases as they rise from the fuel bed and thereby produce a thorough combustion increasing the heating efficiency of the furnace and it consists essentially of a fire-pot having an open upper end, a superheating chamber extending over such open upper end, air discharge pipes extending through the side wall of the firepot and having their outlet ends directed upward to discharge air over the fuel bed at each side of the fire-pot to commingle together centrally thereof and with the rising gases and a downwardly directed central discharge pipe for directing a stream of air to commingle with the escaping gases and to force the aforesaid commingled air and gas downward against the incandescent fire-bed as hereinafter more particularly explained by the following specification.

The figure represents a sectional view of a furnace constructed in accordance with my invention.

1 indicates the fire pot of the furnace provided with a grate 2, fuel-bed 3, and superheating chamber 4 provided with superheating pipes 5, such superheating chamber extending over the open upper end 6 of the fire-pot so as to relieve the hot gases rising therefrom. 7 is an air supply pipe extending in inverted U form over the top of the superheating chamber provided with horizontally turned portions 7* and 8* supported in the furnace casing 9 at each side of the fire-pot. 10 are the hot air pipes for conducting the heated air to the desired portions of the house or building. 11 and 12 are openings in the side wall of the fire-pot 1 provided with up-turned ends 13 by which the air is discharged into the fire-pot at each

side thereof commingling with the hot gases rising from the fuel-bed 3 and merging centrally together over the fuel-bed.

14 is a depending pipe extending from the horizontal portion 7° of the inverted U-shaped pipe 7. The pipe 14 extends through an orifice 15 formed centrally in the top of the superheating chamber 4, such pipe depending vertically through the superheating chamber and having an outlet 16 at its lower end located centrally within the opening 6 between the fire-pot and the superheating chamber 4. The outlet 16 may be provided with a suitably flared portion 17, the head of which may be in the form of a perforated rose 18 to distribute the air in finely divided portions so as to more thoroughly commingle with the hot gases.

The air from the pipe 16 commingles with the hot gases escaping through the outlet 6 and which have failed to commingle with the air fed in from the outlet 13. The air from the pipe 16 being directed downwardly and centrally of the fire-pot forces the air fed in from the pipe 13 and commingled with the hot gases downward against the incandescent fire-bed thereby producing a thorough combustion of the gases.

From this description it will be seen that I have devised a very simple device which will produce a very efficient secondary combustion of the hot gases and thereby greatly increase the efficiency of the furnace producing a far greater heat than would otherwise be obtained.

What I claim as my invention is:

The combination with a furnace fire-pot having an open upper end, an air supply inverted U pipe extending over the fire-pot, horizontal branches extending from each depending arm of the U through the wall of the fire-pot in proximity to the fuel-bed and to each side thereof, and a depending pipe extending from the horizontal portion of the U to discharge air into the open upper end of the furnace to force the aforesaid air downward into contact with the fuel-bed.

GEORGE RUTHERFORD.

Witnesses:

FINLEY EVANS PERRIN,
MARY CAMPBELL.