

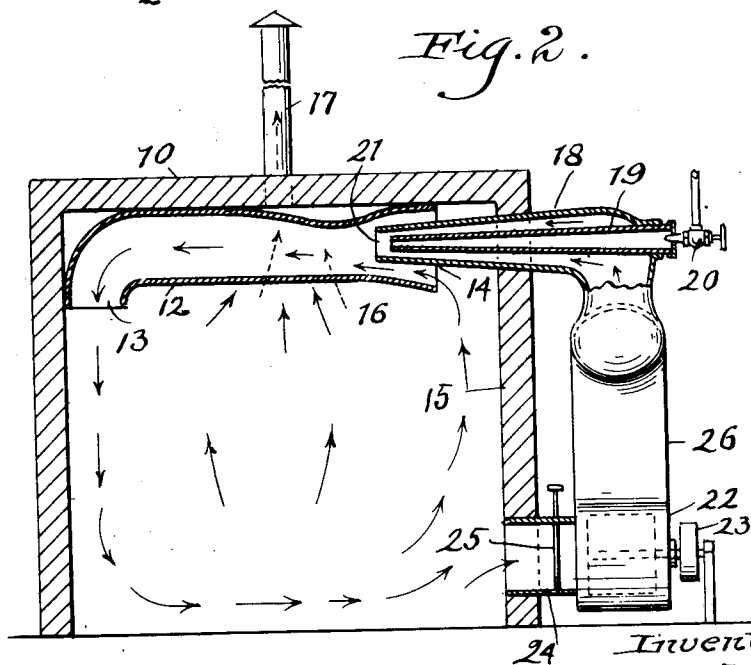
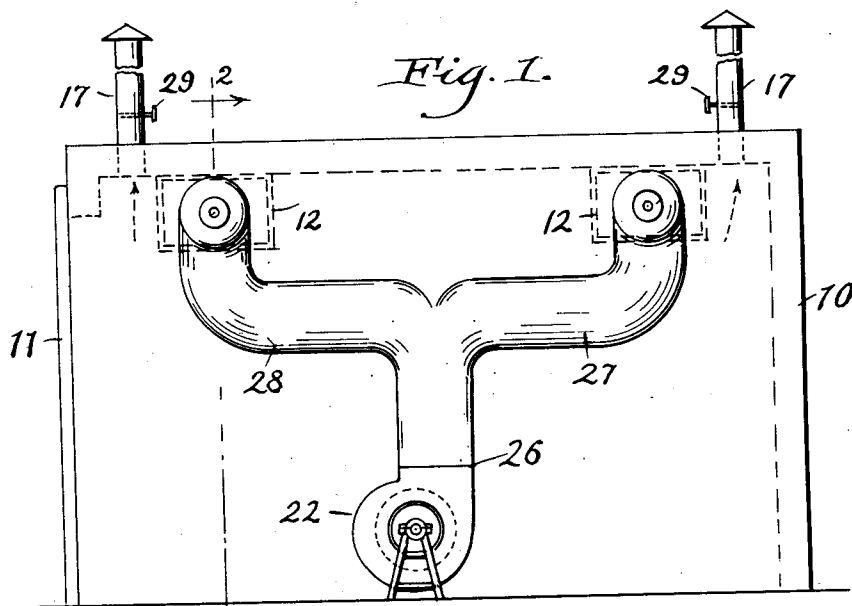
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VENTILATING SYSTEM FOR OVENS

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VENTILATING SYSTEM FOR OVENS.

Application filed May 19, 1928. Serial No. 279,001.

This invention relates to means for heating and ventilating ovens, furnaces and other analogous apparatus and is especially adapted for use in connection with core ovens.

It is one of the objects of the invention to provide an efficient heating and circulating system for apparatus of the character specified, that will be of relatively small size and correspondingly inexpensive and which, nevertheless, will operate efficiently.

It is a further object of the invention to have the parts so designed and arranged that they will be durable and reliable in their operation and not subject to frequent break-downs.

Other objects of the invention and the features of novelty will be apparent from the following description taken in connection with the accompanying drawings, of which—

Fig. 1 is a side elevation of a core oven embodying one form of my invention; and

Fig. 2 is a transverse section thereof on the line 2—2 of Fig. 1.

Referring to the drawings, 10 indicates, more or less diagrammatically, an oven the walls of which may be constructed of brick or any of the materials that are commonly used for that purpose. A door 11 is shown at one end of the furnace and this may be arranged for opening and closing by any suitable means such as is now commonly used for that purpose.

Depending upon the length of the oven, as well as its general size, I provide one or more ducts 12 across the interior and suitably supported from the top of the oven. In the drawings I have shown two of the ducts 12 but it will be understood that more or less than two may be used in accordance with the requirements of the particular case. The ducts 12 have a downwardly directed discharge 13, adjacent one of the side walls of the furnace, and are preferably, though not necessarily, rectangular in cross section. The ducts 12 are also provided with an open end 14 which should be spaced a sufficient distance away from the side wall 15 to permit the gases, within the oven, to freely enter the duct. Spaced some distance from the end 14, of the duct 12, there is a constricted portion 16, or venturi, for a purpose to be hereinafter described. One or more exhaust flues or chimneys 17 should be provided in the top of the oven and preferably adjacent

the ends thereof for the purpose of carrying off the surplus gases.

A burner body or tube 18, which may be of conical form as shown, extends through the side wall 15 and through the open end 14 of the duct 12 to a point adjacent the constricted portion 16 thereof. A firing tube 19 is arranged concentrically within the body or tube 18 and may be supplied with liquid or gas fuel by means of a nozzle 20 located at its outer end. The inner end 21, of the tube 19, is preferably arranged within the tube 18.

A blower 22 is suitably supported outside of the oven and may be of any preferred construction and may be driven by any suitable power means, a pulley 23 being shown for that purpose. The intake of the blower 22 communicates with the interior of the oven, adjacent the bottom thereof, by means of a pipe 24 having a control damper 25 therein. The discharge from the blower 22 is connected with the burner body or tube 18 by means of the pipe 26 and, when more than one of the burners are used, the pipe 26 may be branched as indicated at 27 and 28 for the purpose of conveying the gases to the several burners.

In the operation of the apparatus the burning fuel is projected through the tube 19 into the duct 12. The blower 22, being in operation, will draw the gases from the lower part of the oven 10 and force them through the burner body or tube 18. On account of these gases being at oven temperature they will, on account of circulating around the tube 19, absorb heat from the latter and tend to keep it at a temperature that will be low enough to insure a relatively long life for this tube. The gases passing through the tube 18 are not only raised in temperature, by the heat absorbed from the tube 19, but, on account of their increase in velocity as they approach the smaller end of the tube 18, will produce a siphoning effect which will assist in drawing the products of combustion out of the tube 19. The products of combustion will thus be mixed with the gases passing through the tube 18 so that the mixture will have a resultant temperature that will be very much lower than that of the products of combustion in the tube 19. On account of the relatively high velocity of the gases and products of combustion, when discharged from the tube 18, they will produce a flow through

the duct 12, toward the discharge 13 thereof. The constricted portion 16, of the duct 12, causes the velocity of the gases which enter the open end 14 of the duct 12 to be increased or augmented so that the combined action of the blast from the tube 18 and the constricted part 16 of the duct 12 will lower the pressure at the open end 14 and induce the gases to flow from the oven through this opening and into the duct where they will be mingled with the gases and products of combustion discharged from the tube 18 and the resultant temperature of the mixture will be but slightly higher than the normal temperature within the oven.

On account of the discharge opening 13 being directed downwardly the gases will be caused to circulate in the oven in the direction of the arrows in Fig. 2. A portion of the gases will return to the duct 12, by way of the opening 14, and another portion will be drawn through the blower 22 and discharged into the duct by way of the tube 18. In this manner a constant and reliable circulation of the gases is maintained within the oven and, because only a portion of the gases is passed through the blower 22, the latter may be of relatively small size and will require only a small amount of power to operate. If desired, dampers 29 may be provided in the pipe 17 for the purpose of controlling the discharge of gases therethrough.

Having thus described my invention, what I claim is:

1. In drying ovens, the combination with

the outer walls of a gas duct arranged in the upper part of the oven and having a downwardly directed discharge opening into the oven adjacent a side wall, a burner projecting into said duct and adapted to force the products of combustion toward said discharge, said duct having an intake opening through which the gases in the oven are drawn into the duct and mixed with the products of combustion from said burner, and an externally arranged blower having its intake in communication with the lower part of the oven, and the discharge from said blower being directed into said duct to augment the circulation of the gas therethrough.

2. In drying ovens, the combination with the outer walls of a gas duct arranged in the upper part of the oven and having a constricted portion and a downwardly directed discharge opening into the oven adjacent a side wall, a burner projecting into said duct to a point adjacent said constricted portion and adapted to force the products of combustion toward said discharge, said duct having an intake surrounding said burner through which the gases in the oven are drawn into the duct and mixed with the products of combustion from said burner, and an externally arranged blower having its intake in communication with the lower part of the oven and its discharge surrounding said burner and directed into the constricted portion of said duct.

In testimony whereof, I hereunto affix my signature.

HARRY PAUL McCANN.