

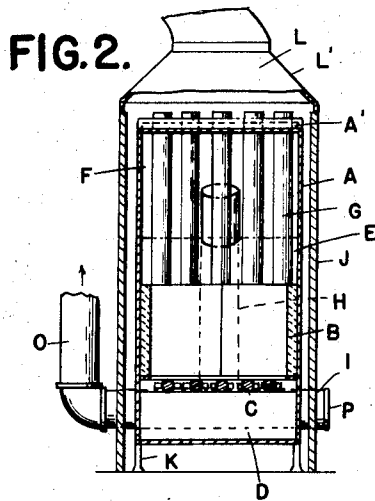
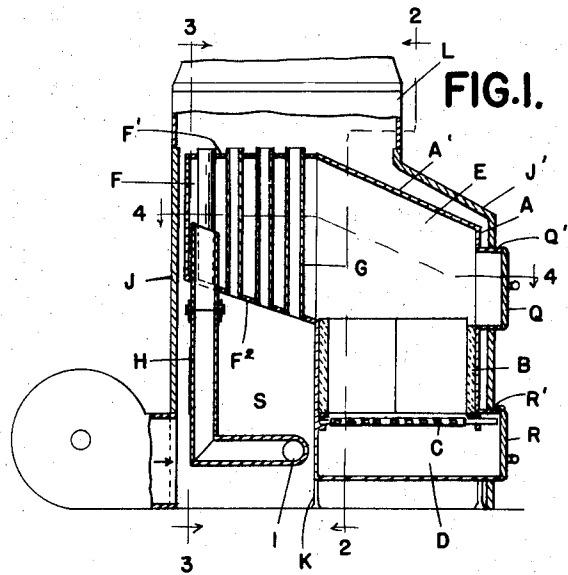
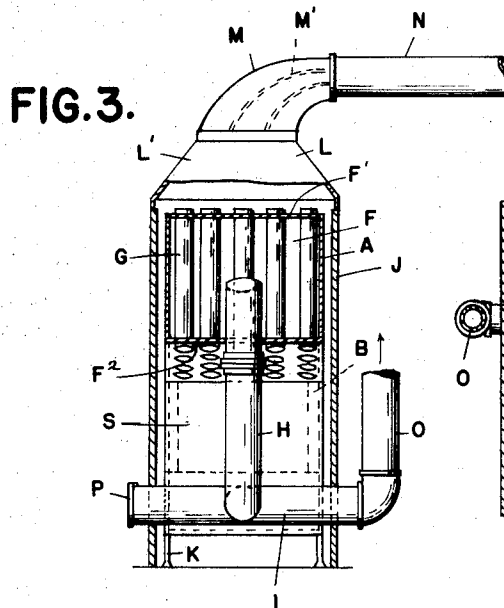
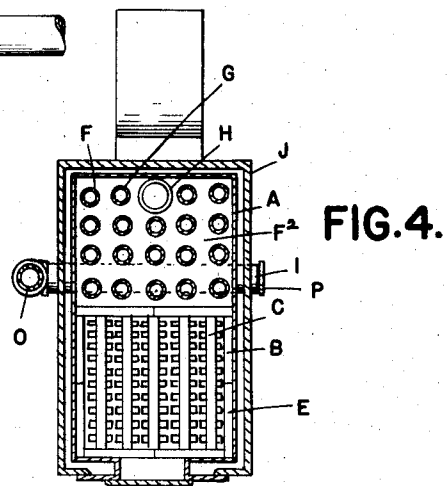
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WARM AIR FURNACE

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WARM AIR FURNACE

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3 Claims. (Cl. 126—110)

The invention relates to warm air furnaces and has for its object, the obtaining of a simple construction that can be manufactured at relatively low cost and which has certain advantages which will be specifically referred to. To this end, the invention consists in the construction as hereinafter described.

In the drawing:

Figure 1 is a vertical longitudinal section through my improved furnace;

Figure 2 is a section taken on line 2—2 of Figure 1;

Figure 3 is a cross-section on line 3—3 of Figure 1; and

Figure 4 is a horizontal section on line 4—4 of Figure 1.

A is a casing preferably of rectangular form and preferably constructed of sheet steel. Within this casing is arranged a suitable refractory lining B for the fire box, a grate C therebeneath, an ash box D beneath the grate, and a combustion chamber E above the fire box which has a top wall A' inclining upward from front to rear. Projecting rearward from the combustion chamber E is a radiator section F which has side walls forming a continuation of the side walls of the casing A, a substantially horizontal top wall F', and a bottom wall F'' which slopes upward from front to rear. Connected to these top and bottom walls and extending through the chamber therebetween are a series of flues G which form air channels. There is also a flue H connected to the bottom wall extending upward into the chamber substantially one-half its height and also extending downward and then forward where it is connected to a laterally extending flue I. Surrounding the casing A is a jacket J of rectangular form and having its walls slightly spaced from the walls of the casing A. The latter is supported upon feet K so as to form an air chamber therebeneath and this chamber connects with the vertical passages between the walls of the casing A and the jacket J. The top of the jacket J has an inclined portion J' sloping upward from the front for a short distance rearward and merging into a hood portion L having inwardly inclined side walls L'. At the top of this hood is an elbow portion M connecting with the laterally extending warm air conduit N. This elbow has arranged therein one or more partitions M' which divide the space into separate channels all of which connect the hood with the conduit N. The transverse flue I extends outward through the side walls of the jacket J, one end being connected with a pipe O leading to the chimney and the

other end having a detachable cover P forming a clean-out. An air blower is arranged in any suitable location, preferably in rear of the jacket J, and connecting with the chamber which is below the radiator F.

With the construction as described, the gaseous products of combustion are directed laterally through the radiator section F and then downward through the flues H and I before finally passing through the pipe O to the chimney. This causes the cold air which is propelled inward by the blower to first come in contact with the flues H and I absorbing therefrom a great deal of heat that would otherwise be wasted. The air then passes upward through the flues G in the radiator into the hood L from which it passes through the elbow M to the conduit N. A certain amount of the air also passes beneath the casing A and upward through the channels between said casing and the jacket, being then directed forward by the inclined top wall J' and into the hood L. Thus, the construction will be very efficient. Where solid fuel is used this is introduced through a fuel door Q which is connected to a door frame Q' extending from the casing A and through the jacket J. An ash door R and door frame R' similarly connects with the ash chamber D. Where the fuel used is oil, the portions of the mechanism which are outside the furnace chamber may be arranged in the space S within the jacket and beneath the radiator F.

My improved construction has various advantages among which are: First, that stack temperature can be regulated to any extent desired. This is by the down-draft flues H and I arranged in the chamber S and by increasing or decreasing the length of these flues, more or less heat will be extracted from the gaseous products of combustion before their final passage into the pipe O and to the chimney. Second, the radiator is in open communication with the fire box while the air flues passing through this radiator form direct passages between the chamber S and the hood L. Third, the chamber S within the jacket in addition to holding the flues H and I provides space for the location of portions of the oil burner if this is used as the heating means.

What I claim as my invention is:

1. In a furnace, a fire box, a combustion chamber extending upwardly from said fire box, a chamber extending laterally from said combustion chamber, an enclosing jacket for the fire box and chambers aforesaid providing air spaces above and below said laterally extending cham-

ber, a wall of said jacket having an opening constituting an air inlet for the space below the laterally extending chamber aforesaid, a blower for forcing air from a suitable source through
 5 said opening into the air space below said laterally extending chamber, a series of tubes extending substantially vertically through the laterally extending chamber for conducting air from the air space below to the air space above said laterally extending chamber, a down draft flue having
 10 its inlet between the tubes just mentioned above the bottom of the laterally extending chamber and having a portion within the air space below said laterally extending chamber opposite the air opening in the jacket so as to be
 15 impinged upon by air from the blower for preheating the air before it is conducted by said tubes to the air space above said laterally extending chamber.

2. In a furnace, a fire box, a combustion chamber extending upwardly from said fire box, a substantially horizontal box-like chamber projecting rearwardly from said combustion chamber, an enclosing jacket for the fire box and
 20 chambers aforesaid providing air spaces above and below said rearwardly projecting chamber, a wall of said jacket having an opening through which air from a suitable source may be discharged into the air space below said rearwardly
 25 projecting chamber, a series of tubes extending substantially vertically through the rearwardly projecting chamber for conducting air from the air space below to the air space above the rearwardly projecting chamber, a down draft flue
 30 having its inlet between said tubes above the bottom of the rearwardly projecting chamber and having a portion within the air space below said rearwardly projecting chamber opposite the air

opening aforesaid so as to be impinged upon by air from said opening for preheating the air before it is conducted by said tubes to the air space above said rearwardly projecting chamber, the down draft flue, rearwardly projecting chamber, and upper and lower air spaces aforesaid all being in substantially vertical alignment at the rear of the fire box and upwardly extending combustion chamber.

3. In a furnace, a fire box, a combustion chamber extending upwardly from said fire box, a chamber extending laterally from said combustion chamber, an enclosing jacket for the fire box and chambers aforesaid providing air spaces above and below said laterally extending chamber, a wall of said jacket having an opening
 10 through which air from a suitable source may be discharged into the air space below said laterally extending chamber, a series of tubes extending vertically through the laterally extending chamber for conducting air from the air space below to the air space above the laterally
 15 extending chamber, a down draft flue having its inlet between the tubes aforesaid above the bottom of the laterally extending chamber and having a portion within the air space below said laterally extending chamber opposite the air
 20 openings in the jacket so as to be impinged upon by air from said opening for preheating the air before it is conducted by the tubes to the air space above said laterally extending chamber, the down draft flue, laterally extending chamber, and upper and lower spaces aforesaid all being in substantially vertical alignment at one side of the fire box and upwardly extending combustion
 25 chamber.

HARRY A. BERTOSSA.