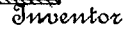


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Patented July 4, 1911.



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# UNITED STATES PATENT OFFICE.

CARL CARLSON, OF PORTLAND, OREGON.

FURNACE.

997,178.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, CARL CARLSON, a subject of the Czar of Russia, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Furnaces, of which the following is a specification.

This invention relates to furnaces, and is designed to construct a furnace which will retain substantially all of the heat therein, and which will prevent the fumes and gases from the coal from passing through the heat distributing pipes.

With the above and other objects in view, this invention consists in the construction, combination, and arrangement of parts, all as hereinafter more fully described, claimed, and illustrated in the accompanying drawings wherein

Figure 1 is a vertical section taken along line 1—1 of Fig. 2; Fig. 2 is a similar section taken along line 2—2 of Fig. 1; Fig. 3 is a top plan view of the pipes or fume conducting elements located above the grate.

The furnace forming the subject matter of the present invention is provided with a grate having an ash pit of the usual construction disposed below the same, and a series of heat distributing pipes operating at the upper side of said furnace. An air inlet pipe is located adjacent to the grate but separated therefrom, said pipe leading into an initial heating passage from which the air passes about a series of pipes located directly over the grate, and thence around the upper part of the inner compartment of the furnace to the heat distributing pipes. The upper part of the inner compartment of the furnace is provided with a grate upon which are located a quantity of stone or other similar material which accumulate the heat and insure the thorough heating of the air as the same circulates about the portion of the inner compartment.

Referring more particularly to the drawings, 10 indicates the outer shell of the furnace which comprises end and side walls and a top therefor and in which is located the inner compartment or shell 11 comprising a pair of walls and a top therefor positioned in spaced relation to said side walls and top. A grate 12 of the usual construction is located adjacent to the bottom of the inner compartment or shell, and separates the ash pit A from the fire pit B. A fresh air conduit pipe 13 enters the lower side of the

outer shell 10 and opens into the passage 14 formed between one side of the inner shell 11 and the adjacent side of the outer shell 10. A pair of plates 15 and 15' are disposed over the fire pit B and form a closure between the upper extremity of the compartment 11 and the fire pit, the plate 15' extending completely across and closing the passage 14. These plates have a series of pipes 16 interposed therebetween which permit the gases, heat, smoke, and the like, to pass from the fire pit into the upper part of the compartment 11. The fresh air passes from the pipe 13 into the passage 14 and circulate about the pipes 16, being heated during said circulation, then passes into the passage 17 located between the opposite wall of the compartment 11 and the adjacent wall of the shell 10. The upper end of the compartment 11 is closed by a plate 18 from which extends the smoke stack 19. Thus as the air passes from the passage 17 to the distributing pipes 20 located over the passage 14, the same will in no way come in contact with the smoke, fumes, and gases passing from the compartment 11.

A perforated grate 21 is disposed above the plates 15 and 15' and has mounted thereon a quantity of stone or other similar material 22 which accumulates the heat during the passage of the gases, fumes, and smoke therethrough, said passage insuring practically all of the heat in said furnace.

From the foregoing it will readily be understood that the air in passing through the furnace is thoroughly heated, and at the same time is devoid of all dangerous gases which normally occur in air furnaces.

Having thus fully described my invention, what is claimed as new is:—

A furnace, comprising an outer compartment of side and end walls and a top therefor, a pair of inner walls and a top therefor positioned in spaced relation to said side walls and first named top forming passages therebetween, a fire pit located intermediate said inner walls, a pair of superimposed spaced plates disposed above said fire pit, the upper one of said plates extending completely across the passage formed on one side of the furnace and dividing the same, the space between said plates forming a passage whereby air is conducted from said divided passage to the passage on the opposite side of the furnace, a grate located above said plates, a quantity of heat accumulating

material located on said grate, a smoke stack  
located above said heat accumulating mate-  
rial, a plurality of pipes interposed between  
said plates whereby communication is had  
5 between said fire pit and heat accumulating  
material for conducting the products of com-  
bustion from said fire pit over said heat ac-  
cumulating material and out said stack, an  
air inlet adjacent to the lower terminal of

said divided passage, and heat distributing 10  
pipes connected with said outer compart-  
ment, for the purpose herein set forth.

In testimony whereof I affix my signature  
in presence of two witnesses.

CARL CARLSON.

Witnesses:

J. I. EGGMAN,  
E. O. BLAKE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."