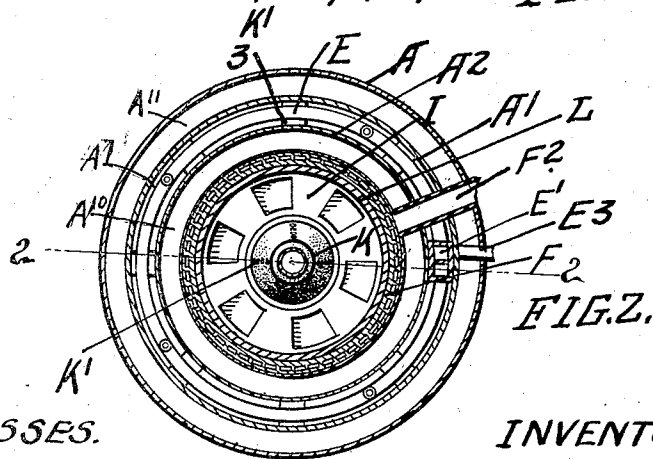
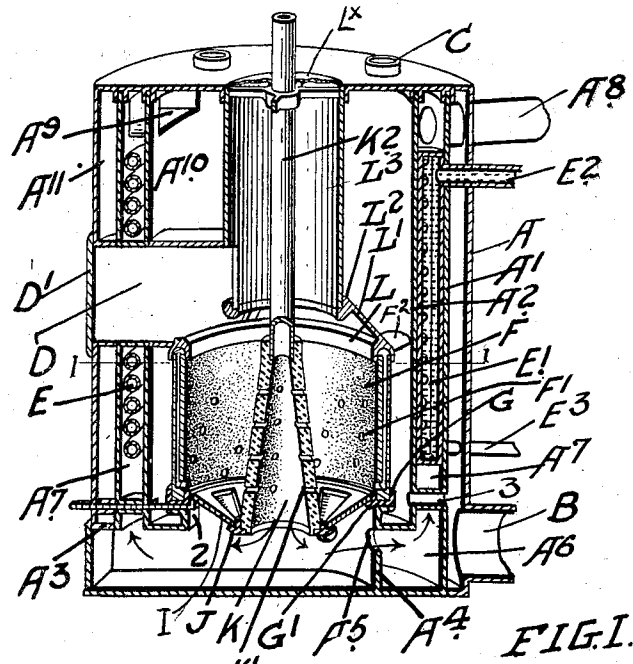


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HEATER.

APPLICATION FILED JUNE 18, 1907.

937,788.

Patented Oct. 26, 1909.



WITNESSES.
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WILLIAM GEORGE GLENN, OF TORONTO, ONTARIO, CANADA.

HEATER.

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Specification of Letters Patent.

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Application filed June 18, 1907. Serial No. 375,831.

To all whom it may concern:

Be it known that I, WILLIAM GEORGE GLENN, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Heaters, of which the following is the specification.

My invention relates to improvements in heaters, and the object of the invention is to devise a heater in which all the gases and smoke will be consumed before they leave the heater and hence produce perfect combustion.

A further object is to make the heater adaptable for hot air and hot water heating.

A still further object is to produce heat at the lower portion of the heater and thereby provide a maximum heat at the lower portion of the heater and also provide a more even radiating surface from the top to the bottom of the heater, and further conserve the heat within the heater, so as to obtain a maximum benefit in distribution.

Still further objects are to make the heater of minimum height, and, therefore, adaptable to low ceiling cellars, and to make the fire pot, such a form as will permit the use of a low and cheap grade of fuel.

To effect these objects I have constructed my heater with a fire pot having a hollow wall perforated at the lower inner portion thereof, and a central hollow cone also perforated, a cone frustum shaped top for the fire pot, and a feeding orifice leading to the fire pot, an inner wall surrounding the fire pot and extending down to the bottom of the same and forming an inner chamber, an intermediate wall surrounding the inner wall and forming an intermediate chamber communicating with the ash pit, an outer chamber, passage-ways at the top connecting the outer chamber with the innermost chamber, passage-ways leading from the ash pit below the fire box into the intermediate chamber and a smoke pipe leading from the intermediate chamber out through the outer chamber, and hot water coils located in the intermediate chamber, the parts being otherwise arranged and constructed in detail as hereinafter more particularly explained.

Figure 1, is a sectional perspective view showing my improved furnace and heater the section being taken on line 2—2, Fig. 2. Fig. 2, is a sectional plan on a plane through the upper portion of the fire pot on the line 1—1 of Fig. 1.

In the drawings like characters of reference indicate corresponding parts in each figure.

A is the outer wall of the furnace.

B is a fresh air conduit leading thereto and C are the heat distributing pipes extending from the top of the innermost chamber A¹⁰.

D is the fuel orifice and D' the door thereof.

A' is the intermediate wall, which extends from the top to the bottom of the furnace.

A² is the inner wall, which extends from the top of the furnace down to a plate A³ forming the major portion of the top of the ash pit.

A⁴ is the back wall of the ash pit, which is provided with an opening A⁵ leading to the space A⁶ underneath the intermediate chamber A' formed between the walls A' and A². It will be noticed that the intermediate chamber A' communicates around the bottom thereof with the ash pit.

A⁷ is the smoke pipe leading from the top of the chamber A' through the wall A² and outer wall A.

A⁸ is the passage-way leading from the innermost chamber A¹⁰ to the outermost chamber A¹¹. The passage-way A⁸ is located preferably near the top of the furnace.

E are hot water coils arranged circularly within the chamber A' and connected to the divided head E' into which the flow pipe E² and the return pipe E³ extend.

F is a hollow or chambered fire pot, which is supported on the upwardly extending flange 2 attached to or forming part of the top plate A³ of the ash pit being set in a grooved ring G.

The inner wall of the fire pot F is provided with perforations F' toward the lower portion thereof.

F² is the pipe leading through the walls A A' A² into the top of the chamber formed between the walls of the fire pot and is designed to supply fresh air into the space between the inner and outer walls of the fire pot.

I is a closable grate, which is of a dished or cone-frustum shaped form and supported on a flange G' forming part of the ring G suitably supported by the walls of the ash pit. The grate has a ring J.

K is a hollow cone provided with perforations K'. The cone is supported on the

ring J and has a pipe K² leading from the top thereof for the supply of fresh air.

L is a ring surrounding the fire pot and carrying, by means of the arms L', the ring L² supporting the cylindrical casing L³ which extends up to the top of the outer casing A. The cylindrical casing L³ forms a chamber to receive the coal where the heater is used as a self feeding stove or heater. The top of the chamber L³, is, of course, provided with a closure L^x.

The fire pot wall F is preferably made of cast iron, and the central hollow cone of fire clay, or other non-fusible materials.

The draft in my furnace is inward and downward and passes from the fresh air conduit F² through the hollow fire pot and perforations thereof and the bed of fuel contained therein inwardly and downwardly through the hollow perforated cone or chamber K into the ash pit thence upwardly through the annular chamber A⁷ and out by the smoke pipe A⁸. The pipe K², supplies the fresh air or oxygen to produce a secondary combustion in the chamber K. The result is that all the fixed carbons in the fuel and smoke are burned and the greatest heat is at the bottom of the fire pot and heater instead of at the top where the coal would be placed through the fire door D if the furnace is not a self feeding one.

The heat radiated from the fire pot passes through the chambers A¹⁰ and A¹¹, such chambers being connected at the bottom by a pipe or pipes 3, whereby the fresh air passes inwardly into the chamber A¹⁰ to be heated and by the passageway A⁹ whereby the heated air passes inwardly near the top of the furnace into the chamber A¹⁰.

The heated air at the top of the furnace is as hereinbefore stated carried off by the pipes C to the different portions of the house or buildings.

It will be seen by the use of my hot water coils in the intermediate chamber that the heat generators in the fire pot will pass relieved of the smoke and products of combustion upwardly through the hot water coils, thereby serving to heat the hot water coils, which, of course, will be suitably connected to radiators throughout the house.

What I claim as my invention is:

1. In a heater, in combination, a chambered or hollow wall fire pot having the inner wall perforated, a communicating pipe leading from the atmosphere to the hollow wall, a suitable grate and supporting ring therefor upon which the fire pot rests, a central vertical gas combustion chamber within

the fire pot and provided with suitably perforated walls and open at its bottom, and a pipe leading into the top of said combustion chamber whereby air is introduced to pass downward through the chamber producing a secondary combustion within the central chamber, and an outlet pipe connected with the heater below the grate for carrying off the products of combustion.

2. In a heater, in combination, a chambered or hollow wall fire pot having the inner wall perforated, a communicating pipe leading from the atmosphere to the hollow wall, a central vertical gas combustion chamber within the fire-pot and provided with suitably perforated walls, and an open bottom, and a pipe leading into the top of the said combustion chamber whereby air is introduced to pass downward through the chamber producing a secondary combustion within the central chamber, and an outlet pipe connected with the bottom of said combustion chamber for carrying off the products of combustion.

3. In a heater, the combination with a fire-pot arranged to have a downward draft through the fuel, of a perforated centrally located secondary combustion chamber in the firepot and open at the bottom, and a pipe connecting the top of said chamber with the atmosphere for supplying a downward draft of air therethrough as and for the purpose specified.

4. In a heater, the combination with a fire-pot, of a gas combustion chamber centrally located within the firepot and having perforations in its walls through which the products of combustion pass, a pipe connecting the top of said chamber with the atmosphere, and an outlet pipe connected with the bottom of said chamber for producing a downward draft of air therethrough.

5. In a heater, the combination with a fire-pot arranged to have an inward and downward draft through the fuel, of a perforated centrally located secondary combustion chamber within the firepot and open at the bottom, and a pipe at the top for admitting fresh air to the said secondary combustion chamber and said combustion chamber having a passageway at the bottom connected to the smoke flue for producing a downward draft of air through the secondary combustion chamber as specified.

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Witnesses:

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