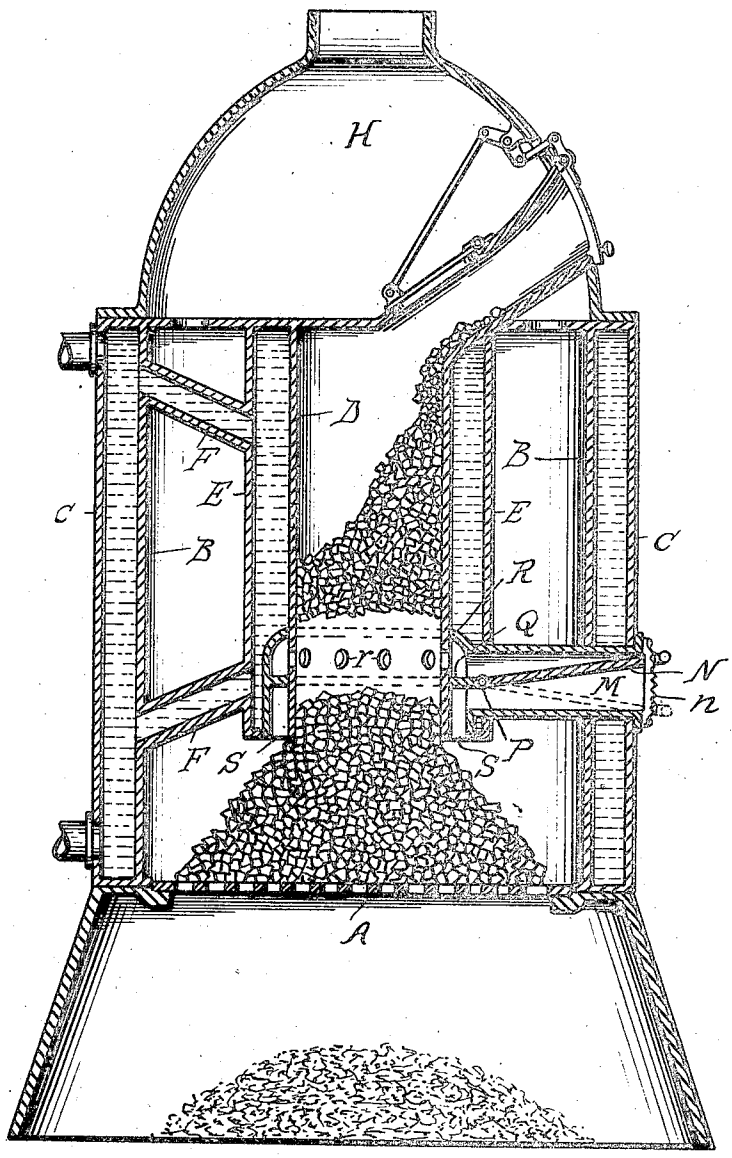
G. W. COPE.

FURNACE.

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902,714. Patented Nov. 3, 1908.



WITNESSES

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FURNACE.

No. 902,714 Specification of Letters Patent. Patented Nov. 3, 1908

Application filed December 23, 1907. Serial No. 407,649.

To all whom it may concern:

Be it known that I, GEORGE W. COPE, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Furnaces, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to furnaces, and consists in the improvements hereinafter described.

In the accompanying drawing the figure is a section in a vertical plane of a furnace embodying my invention.

A, is the grate. B, a wall inclosing the combustion chamber.

C, is a wall surrounding the wall B, and forming a water space or jacket between said walls.

D, is a wall surrounding and forming the magazine through which the coal is fed to the grate A.

E, is a wall surrounding the wall D, and forming a water space or jacket between said walls.

F, F, are tubes connecting the two water jackets above described.

H, is the flue through which the products of combustion are conducted away.

M, is a conduit passing through the wall C, and B, and the water space between, and through the wall E.

R, is a casing located at the lower end of the magazine between the walls E and D, and open at the lower end of said magazine.

r, are apertures formed through the wall D, and communicating with the interior of the casing R, at the upper portion thereof.

Q, is a partition extending around the wall D, and dividing the casing R, into an upper and lower compartment, the upper one of which communicates with the interior of the magazine through the apertures *r*, and the lower one of which opens at S, to the combustion chamber.

N, is a valve pivoted at P, to the partition Q, the valve N, extending across the conduit M, dividing it into two parts.

n, is a notched quadrant with which a latch upon the outer end of the valve N engages to adjust said valve to different positions. When the valve N, is at its highest position, as shown in the figure in full lines, the passage to the upper compartment of the casing B, through the conduit M, is closed and said conduit is opened to the lower compartment of said casing so that air flows through said conduit and out at S, into the combustion chamber to promote the combustion of gases at this point. When the valve N, is turned to its lower position, as indicated by dotted lines, the conduit M, is opened only to the upper part of the casing R, and air is permitted to enter and pass through the aperture *r*, in the wall D. At intermediate positions of the valve N, the conduit will be opened more or less to both of said compartments. When the air passes into the combustion chamber at S, it is supplied to the fire at the surface of the fuel and acts to promote combustion there; when the air passes through the openings *r*, it passes through the fuel carrying with it the generated gases and acting to cause the fire to penetrate deeper into the fuel.

What I claim is:

1. In a furnace having a wall surrounding the combustion chamber, and a magazine, a casing surrounding said magazine, a conduit leading to the outer air and communicating with said casing, said casing being divided into an upper and lower compartment, the lower compartment opening at the lower end of said magazine, the upper compartment opening into said magazine above its lower end and a valve in said conduit adapted to place one or the other of said compartments into communication with the outer air.

2. In a furnace, the combination of a wall surrounding the combustion chamber provided with a water jacket, a magazine provided with a water jacket, a casing in said last named water jacket having a compartment open at the lower end of the magazine, and a compartment opening into said magazine above its lower end, a conduit passing through the first named water jacket and communicating with said casing, and a valve adapted to put said conduit into communication with one or the other of said compartments.

3. In a furnace having a wall surrounding the combustion chamber, a magazine, a casing surrounding said magazine, a partition

dividing said casing into an upper and lower compartment, the lower compartment opening at the lower end of said magazine, the upper compartment opening into said magazine above its lower end, a conduit leading to the outer air communicating with said casing, a valve in said conduit pivoted to said partition and extending toward the outer end of said conduit for the purpose described.

In testimony whereof, I sign this specification in the presence of two witnesses.

GEORGE W. COPE.

Witnesses:

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WILLIAM M. SWAN.