

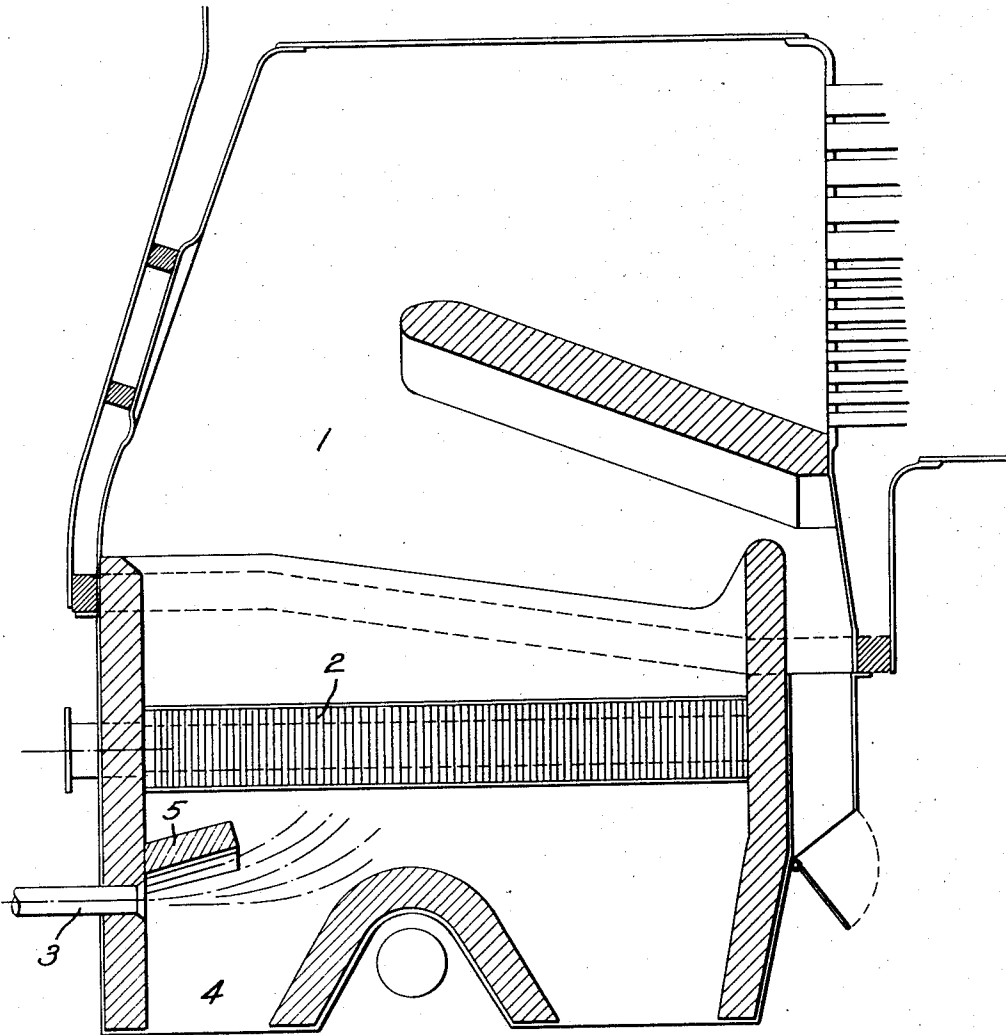
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1,918,401

PULVERIZED FUEL LOCOMOTIVE BOILER

Original Filed March 24, 1927



Inventor:
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UNITED STATES PATENT OFFICE

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ALLGEMEINE ELEKTRICITÄTS-GESELLSCHAFT, OF BERLIN, GERMANY, A FIRM

PULVERIZED FUEL LOCOMOTIVE BOILER

Original application filed March 24, 1927, Serial No. 178,073, and in Germany May 1, 1925. Divided and
this application filed October 22, 1929. Serial No. 401,550.

This application is a division of the application of Walter Kleinow, Albert Morgenroth, Friedrich Reinhardt and Wilhelm Bauer, Serial No. 178,073, filed March 24, 1927, issued as Patent #1,739,035. The invention relates to furnaces, and especially to furnaces for burning pulverulent fuel, and has for its object to provide an improved construction and arrangement in a furnace of this type.

In the case of locomotives with grate firing, the possibility is always present that, during rest periods, an equal steam condition in the boiler can be maintained for a longer period by means of banking the fire. However, in locomotives burning pulverized coal, a fast pressure drop in the boiler occurs when the burner is closed as the glowing wall in the fire box of the boiler heating surface cools gradually and can supply heat for a short time only.

Temporary opening and closing of the large or main burner is possible, but not advisable as too large and sudden heat supplies cause unallowable heat stresses in the material and possible damage to the places where the material is rolled. It has been suggested to provide a small auxiliary pulverized-coal burner besides the main burners. These auxiliary burners, however, have always been arranged in such a way that the flames of the main burner are directed to them. The prevailing opinion was that such an opposition of the main and auxiliary burners was absolutely necessary for a good lighting. It was, however, incidental that the auxiliary burners would burn up in a short time under the influence of the flames which were shooting out of the main burner.

The object of this invention is to provide an improved arrangement whereby these disadvantages are eliminated, and to this end I provide, besides the main burners which are arranged above the ash box and which blow the fuel mainly horizontally or upwards into the firebox, an auxiliary burner in order to maintain a constant steam condition in the boiler when the main burners are closed, and also to insure lighting of the main burners, which small auxiliary burner

is located outside of the reach of the flames of the main burner. This arrangement constitutes an advantageous solution of the problem to keep the boiler under steam in an economical and dependable way in case of an extended interval during which the boiler is not in operation and the main burners are shut off, and also to induce a lighting of the pulverized coal when the main burners are opened, without having to use a special wood or torch fire.

In the drawing, the figure is a sectional view, in part diagrammatic, of a construction embodying the invention.

Referring to the drawing, 1 indicates a fire-box or combustion chamber provided in the lower portion of the furnace and heated with pulverized coal, the pulverized coal being supplied by the burner nozzles 2, which are built into the sides of the fire box. There may be two burner nozzles, one running along each side of the fire box and facing each other after the manner disclosed in the patent referred to above. The necessary combustion air is supplied in any usual or known way, such as that disclosed in the above referred to application. The burners discharge the pulverized fuel and air in a horizontal and upward direction. Located adjacent to the burner nozzles 2, and preferably below them, is a small auxiliary pulverized fuel burner 3, it being located preferably in the bottom part of the ash box 4. Located above the end of auxiliary burner 3 is a special lighting arch 5, which is formed of fire clay, and due to its becoming heated insures a perfect lighting of the pulverized fuel discharged from the auxiliary burner 3.

With the above described arrangement, it will be seen that the auxiliary burner 3 is located out of the path of the flames from the main burners 2, so that it is not likely to be damaged by the heat from them. At the same time, however, it is so located as to be effective to perform its intended function.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a pulverized fuel locomotive, the combination of a fire box and an ash box, a main burner having a plurality of slots for

discharging fuel located above the ash box for normally heating the fire box and an auxiliary burner for heating the fire box while the main burner is out of operation, the auxiliary burner being located in the upper part of the ash box and below the main burner whereby it is out of the path of flames of the main burner, and means for lighting the auxiliary burner comprising an arch located between the auxiliary burner and the main burner.

2. A furnace for pulverulent fuel compris-

ing a combustion chamber in the lower portion of said furnace, a main burner in said combustion chamber provided with a plurality of slots for the discharge of fuel, and means for heating the furnace while the main burner is out of operation, said means comprising an auxiliary burner located out of the path of flames of the main burner, and a lighting arch near the main burner heated during operation of said main burner for lighting the auxiliary burner.

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