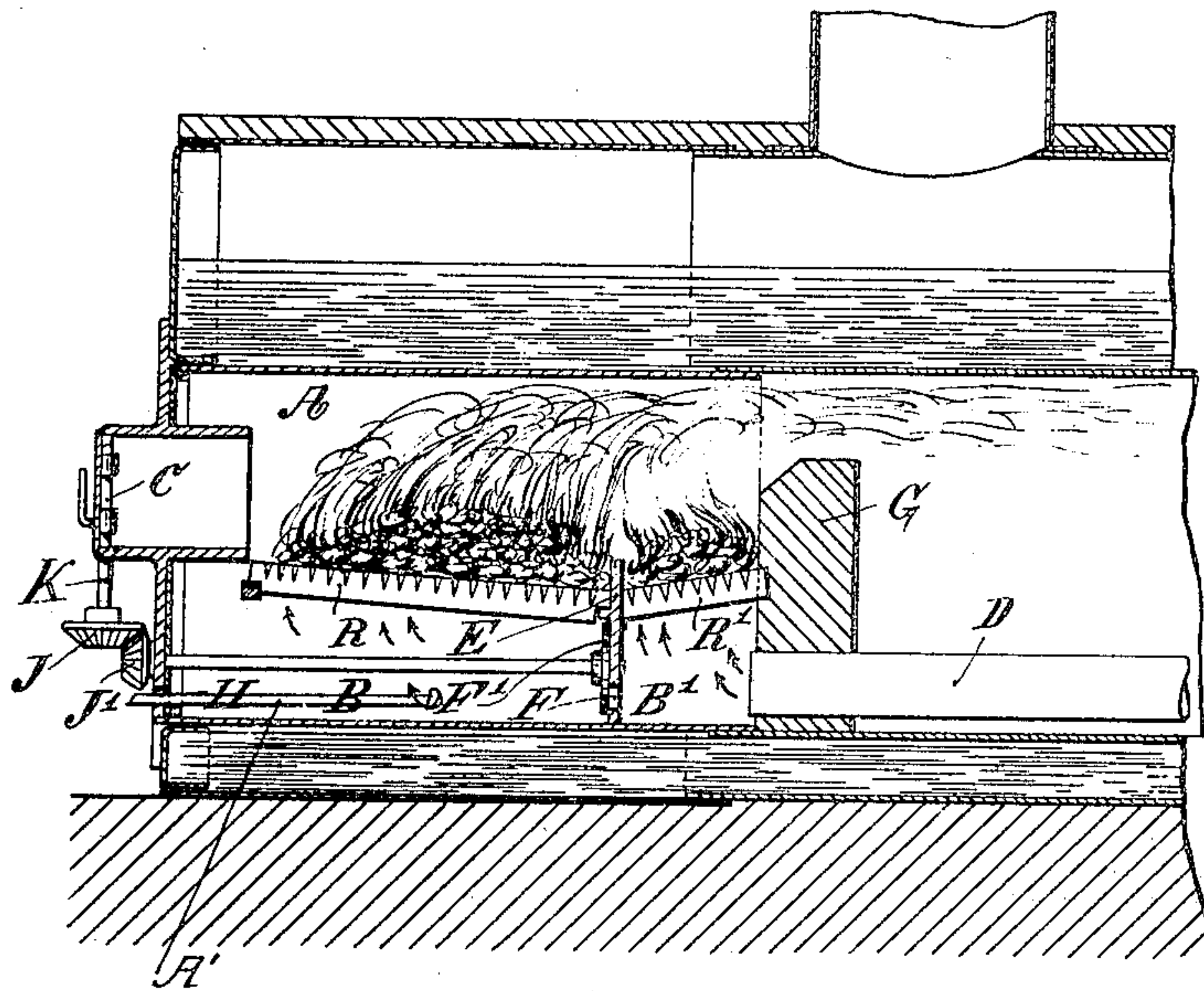


No. 813,102.

PATENTED FEB. 20, 1906.

M. A. LUTZNER.
AIR FEEDING DEVICE FOR FURNACES.
APPLICATION FILED APR. 15, 1902.



Witnesses:
J. B. Aybas,
J. M. Hoctor

M. A. Lutzner,
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UNITED STATES PATENT OFFICE.

MAXIMILIAN ALBERT LUTZNER, OF BERLIN, GERMANY, ASSIGNOR TO
FIRM OF GESELLSCHAFT FÜR INDUSTRIELLE FEUERUNGSANLAGEN
M. B. H., OF BERLIN, GERMANY.

AIR-FEEDING DEVICE FOR FURNACES.

No. 813,102.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed April 15, 1902. Serial No. 102,983.

To all whom it may concern:

Be it known that I, MAXIMILIAN ALBERT LUTZNER, a subject of the German Emperor, and a resident of 50 Gneisenaustasse, Berlin, in the Kingdom of Prussia and Empire of Germany, have invented certain new and useful Improvements in Air-Feeding Devices for Furnaces, fully described and represented in the following specification and the accompanying drawing, forming a part of the same.

This invention relates to heating arrangements with under-grate blowers and with its fuel in a high layer. By the especial arrangement of the grate and the manner of supplying the furnace with air in two zones of pressure a complete smoke and sootless combustion is obtained.

This invention is illustrated by the accompanying drawing, which is a longitudinal vertical sectional view crossing the flame-tube of a steam-boiler and having my invention applied therein.

Through the tube D, under the fire-bridge G, well-heated air is blown, by means of blowers or ventilators, into the ash-box B B'. This box is divided by a cross-wall E into a large compartment B in the front of the heating arrangement and a smaller compartment B' at its rear. The wall E projects beyond the level of the grate and is provided with openings F in its lower part which may be mechanically and automatically opened or closed by a trap or sliding valve F' or in any other suitable manner as soon as the furnace-door C has been opened. The area of the tube D is larger than the area of the opening or openings F, so that the pressure in the large compartment B is lower than the pressure in the small compartment B'. The air that is introduced into the chamber B is saturated by means of moisture which is blown through the hole H in the ash-door by means of a pipe A', said door being closed air-tight.

For regulating the opening or openings F, for instance, an arrangement may be employed which is shown in the figure of the accompanying drawing, (lettered J J' K,) consisting in a canting bevel-gear J, secured on a shaft K, rigidly connected to the furnace-door C, said bevel-gear engaging a bevel-gear J', secured to a shaft adapted to operate a turning plate F' for the purpose of opening or closing the opening F in the wall E. The

grate R R' by the cross-wall E is also divided into two unequal parts, the parts of said grate being arranged so as to form an obtuse angle. The part of the grate next to the fire-bridge G is preferably inclined forward in order to direct the air entering through the tube D to the front part R of the grate. The parts of the grate are so arranged in relation to each other that a high layer of the fuel is obtained in the front part, whereby, if the trap is opened, the heated air issuing from the tube D and entering the high layer of fuel at R causes a partial coking of the fuel, while in the rear part of the grate R' a lively flame is produced, which effects a complete combustion of the burning gases generated in the front part of the grate.

I do not desire to be understood as limiting myself to the details of construction and arrangement as herein described and illustrated, as it is manifest that variations and modifications may be made in the features of construction and arrangement in the adaptation of the device to various conditions of use without departing from the spirit and scope of my invention and improvements. I therefore reserve the right to all such variation and modification as properly fall within the scope of my invention and the terms of the following claims.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In an air-feeding device for furnaces, the combination of a wall dividing the ash-box into two compartments and provided with an opening, a tube for leading heated and compressed air into the rear one of said compartments, the area of said tube being larger than the area of the opening in the wall, and means for moistening the air, introduced through the opening of the wall, in the forward compartment, substantially as described.

2. In an air-feeding device for furnaces, the combination of a wall dividing the ash-box into two compartments and provided with an opening, a tube for leading heated and compressed air into the rear one of the said compartments, the area of said tube being larger than the area of the opening in the wall, means for opening or closing the opening in the wall, and means for moistening the air, introduced through the opening of the

wall, in the forward compartment, substantially as described.

3. In an air-feeding device for furnaces, the combination of a wall dividing the ash-
5 box into two compartments and provided with an opening, a tube for leading heated and compressed air into the rear one of the said compartments, the area of said tube being larger than the area of the opening in the
10 wall, means for opening or closing the opening in the wall, means for connecting the

means for opening or closing the opening in the wall with the fire-door, and means for moistening the air, introduced through the opening of the wall, in the forward compartment, substantially as described. 15

In witness whereof I have hereunto set my hand in presence of two witnesses.

MAXIMILIAN ALBERT LUTZNER.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.