

E. HEILIGENDORFER.

Reverberatory Furnaces for Roasting Ores.

No. 147,056.

Patented Feb. 3, 1874.

fig. 1.

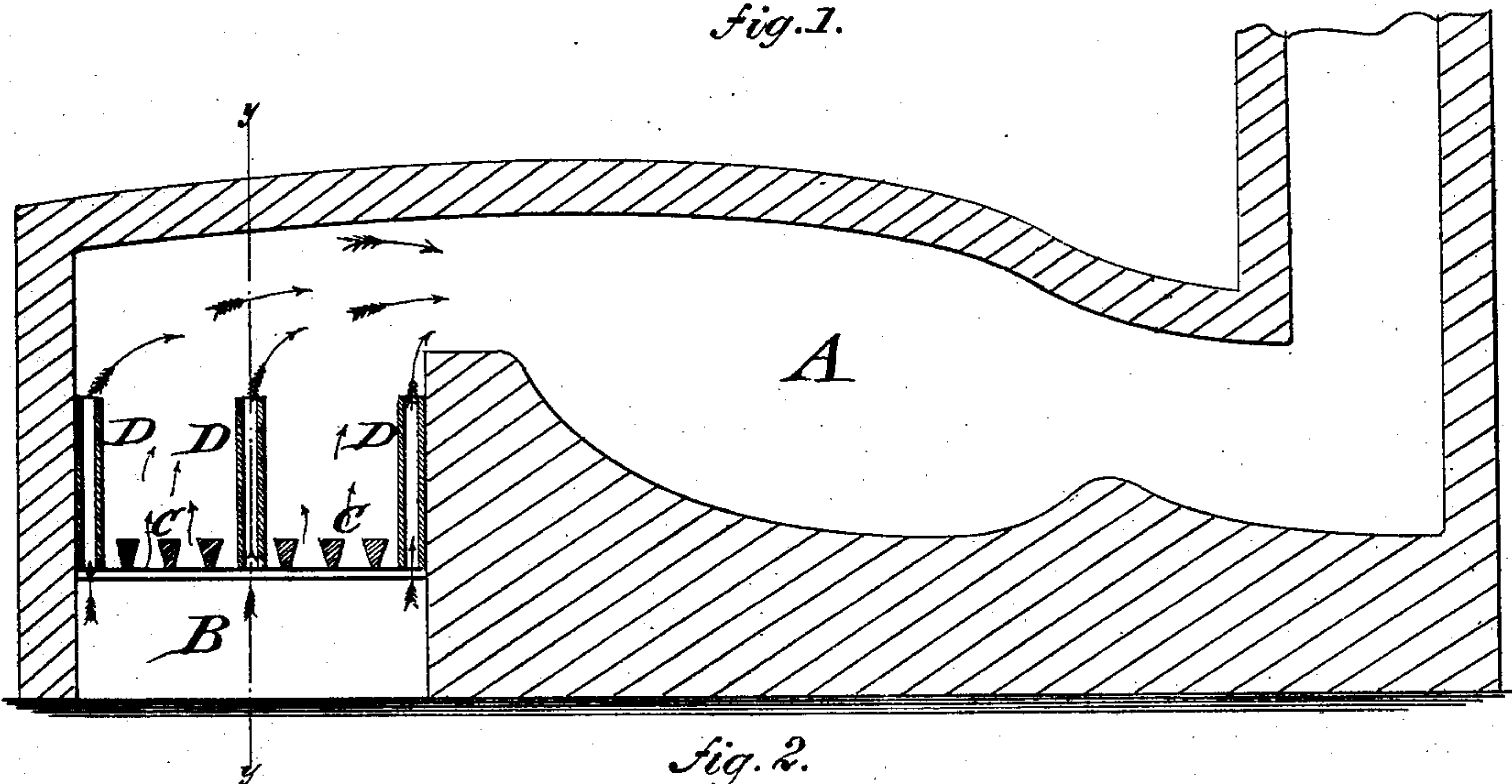
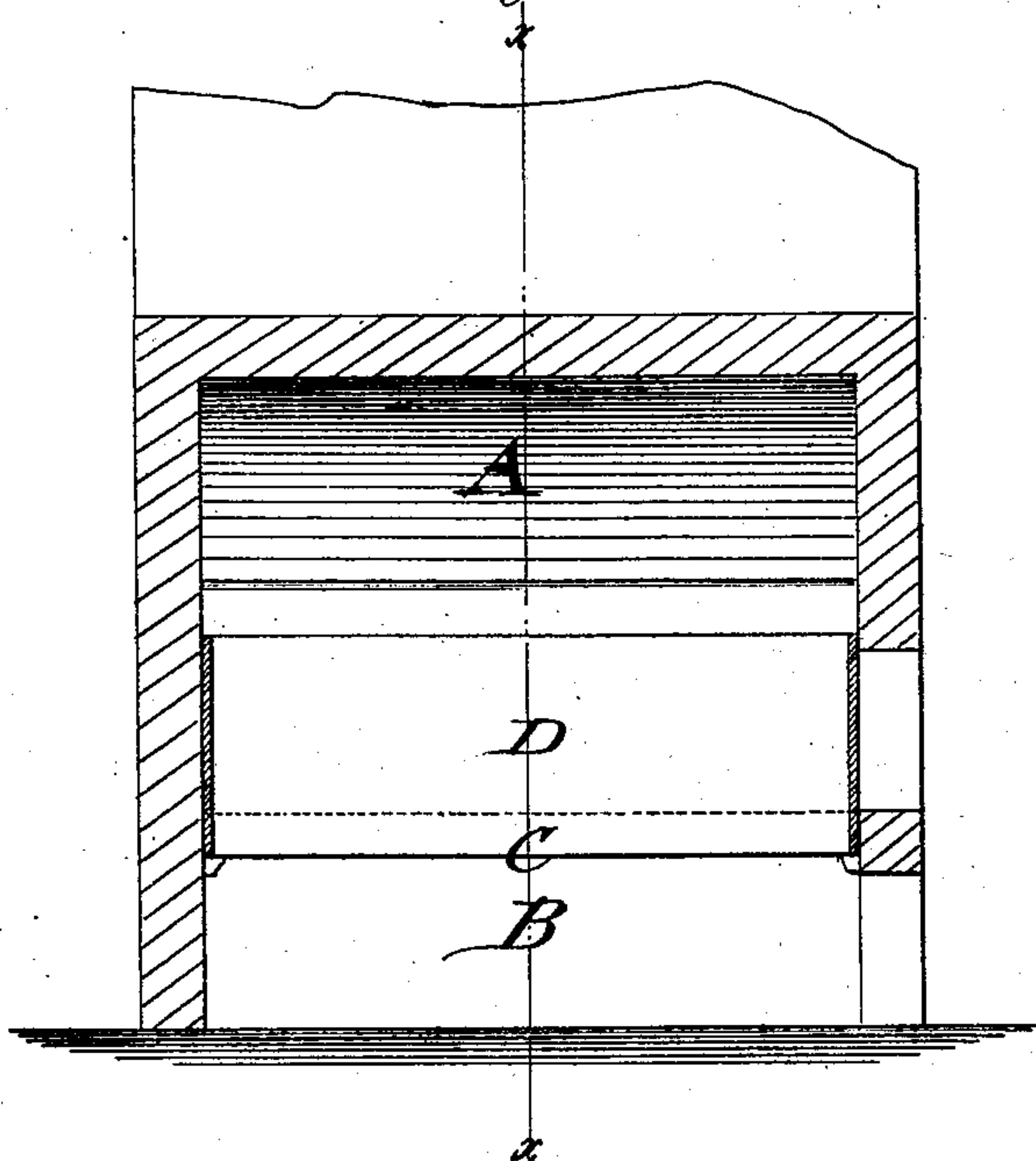


fig. 2.



Witnesses:

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ERNST HEILIGENDORFER, OF BELMONT, NEVADA.

IMPROVEMENT IN REVERBERATORY FURNACES FOR ROASTING ORES.

Specification forming part of Letters Patent No. **147,056**, dated February 3, 1874; application filed November 22, 1873.

To all whom it may concern:

Be it known that I, ERNST HEILIGENDORFER, of Belmont, in the county of Nye and State of Nevada, have invented a new and Improved Furnace-Grate, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a vertical longitudinal section through a common reverberatory furnace on the line *x*, Fig. 2; and Fig. 2, a vertical transverse section through the fire-place on the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of my invention is to so improve the grates of reverberatory and other furnaces that a clear fire, free from smoke, and of the highest oxidizing power, is obtained by currents of heated air, which are introduced between and sidewise to the gases of combustion, so that the caking of the roasted ore is prevented and the grate applied effectively to roast silver ore, galena, and zinc-blende. My invention consists in the introduction of partitions of cast-iron plates between and at both sides of the grate, parallel to the grate-bars and the fire-place, extending as high as the fuel is accumulated on them.

In the drawing, A represents a common reverberatory, Gerstenhofer, or Städtefeld furnace; B, the fire-place, and C the grate-bars. Vertical partitions, made of cast-iron plates D, are arranged parallel to the axis of the fire-place—by preference, one central, the other at the sides of the same, extending through its full length between the grate-bars C. These plates D are made high enough to extend slightly above the fuel placed on the grate. The distance of the plates is regulated by the currents of air which are desired to be introduced into the gases of combustion, and form inlets for fresh hot air throughout the whole length of the grate. If, for instance, three par-

titions are arranged as indicated in Fig. 1, five different currents of gases are produced—two from the fire and three of fresh hot air—which mingle between the fire-bridge and arch of the furnace, and throw a clear fire of superior oxidizing quality on the ore.

The number of partitions may be increased, if pine, with pitch or bituminous coal, is burned, in proportion to the smoke-producing qualities of the fuel, and also to the width of the grate, the main object being always to introduce a sufficient amount of oxygen between the gases of combustion, and to mix them thoroughly on their passage over the fire-bridge. It is, however, desirable sometimes to change the qualities of the fire, so as to have an oxidizing or a reducing fire, for which purpose I arrange my hot-air inlets in such a manner that some or all of them may be partially or entirely closed.

I am aware that gas-generators have been in use for a long time, by which a current of fresh air is introduced to the gases of combustion between the fire-bridge and arch from below.

To increase, however, still more the oxidizing power of such a gas-fire, I introduce, besides the lower current, also one or more middle currents and an upper current, so that the fire is embraced by a lower and upper current and penetrated by a middle one.

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

As an improvement in grates for reverberatory and other furnaces, the fresh-air inlets formed by plates D, which are arranged between and sidewise through the full length of the fire-place in the direction of the grate-bars, substantially as and for the purpose described.

ERNST HEILIGENDORFER.

Witnesses:

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