(No Model.)

A. F. SLANGERUP & Z. T. HEAP.

FURNACE.

No. 419,478. Patented Jan. 14, 1890.

Fig. 1.

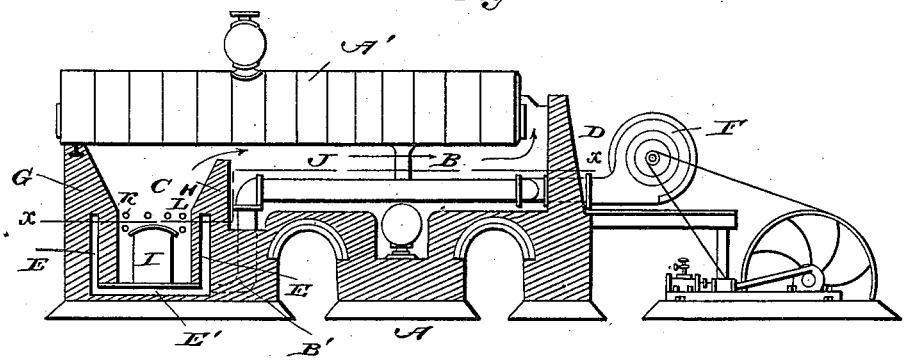


Fig. 2.

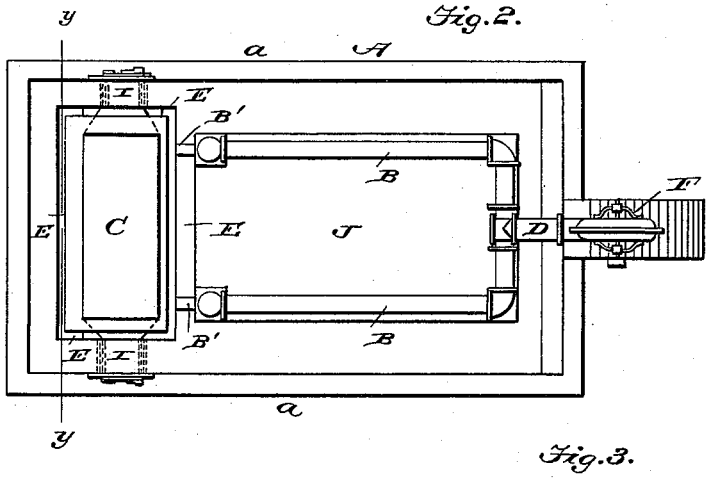


Fig. 3.

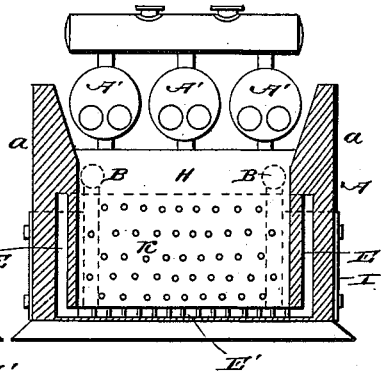
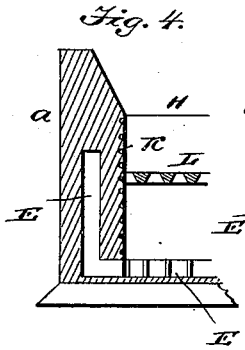


Fig. 4.



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UNITED STATES PATENT OFFICE.

AUGUST F. SLANGERUP AND ZACHERY T. HEAP, OF NEW ORLEANS, LOUISIANA.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 419,478, dated January 14, 1890.

Application filed May 6, 1889. Serial No. 309,843. (No model.)

To all whom it may concern:

Be it known that we, AUGUST FERDINAND SLANGERUP and ZACHERY TAYLOR HEAP, citizens of Denmark and the United States, respectively, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in a Hot-Blast Furnace for Burning Bagasse, Sawdust, Tan-Bark, or other Fuel; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to certain novel and valuable improvements in furnaces which are especially designed for burning bagasse, sawdust, tan-bark, or other fuel, which improvements will be fully understood from the following description and claims, when taken in connection with the annexed drawings, in which—

Figure 1 is a side sectional elevation of our improved furnace as it would appear by removing a side wall. Fig. 2 is a horizontal sectional view of the furnace, taken in the planes indicated by the course of the dotted line $x\ \dot{x}$ on Fig. 1, the boilers and engine being omitted. Fig. 3 is a vertical cross-section through the furnace, taken in the plane indicated by dotted line $y\ y$ on Fig. 2. Fig. 4 is a vertical section through one of the side walls, showing the air-chamber and its tuyeres.

Similar letters refer to similar parts throughout the several views.

Referring to the annexed drawings by letter, A designates the furnace, which is preferably constructed of fire-brick and provided at one end with a combustion-chamber C, formed by the two longitudinal side walls $a\ a$, the end wall G, and the bridge-wall H. The combustion-chamber C C is provided with fire-doors I I, and it is preferably provided with a horizontal grate L, although in some furnaces a grate may be omitted. Surrounding the said combustion-chamber and in the walls $a\ a$ G H is an air-chamber E, which communicates with a hollow base E′ in the hearth or floor of the combustion-chamber a. (Shown in Figs. 1 and 3.)

The chambers E in the side walls $a\ a$ are in communication with the interior of the combustion-chamber C by means of numerous small perforations or tuyeres K (shown clearly in Figs. 3 and 4) for the purpose of jetting highly-heated air into the said chamber C, and thereby greatly facilitating the combustion of the fuel therein. When a grate L is employed, as shown, the heated-air jets are introduced into the chamber C both above and below the grate, so that a strong draft is produced.

B B designate hot-air trunks or pipes which communicate by means of branches B′ B′ with that portion of the vertical air-chamber which is in the bridge-wall H of the furnace, and which also communicate by means of a single pipe D with the casing F of a rotary fan or blower driven by a suitable engine. The horizontal pipes B B are arranged in the horizontal outflue J of the furnace A beneath the steam-boilers A′, so that the air passing from the fan to the chambers E E′ is subjected to the heat of the products of combustion as they pass from the chamber C through said flue J. The walls surrounding the combustion-chamber become highly heated; consequently the air which is forced into the chambers E E′ will be subjected to this heat and be injected through the tuyeres K into the chamber C and among the incandescent fuel therein in a highly rarefied and heated state, thus producing a rapid combustion of the fuel.

It will be observed that not only are the hollow walls a provided with air-jets K, but that the hollow walls G and H are similarly provided.

We are aware that the several parts of our device are old when separately considered, and that the most of them have been used in connection with each other; but we are not aware that all of the parts have been used in the construction and combination herein specifically pointed out.

Having described our invention, what we claim is—

The furnace A, having the fire-chamber C, formed from the side walls $a\ a$, the end wall G, and the bridge-wall H, in combination with the air-chamber E in the four vertical walls of the combustion-chamber, the hollow base

E′ in the hearth of the combustion-chamber and in communication with the chambers E, the tuyeres K in the side walls *a a*, the blower-casing F and blower therein, the single pipe D, leading from the blower, the hot-air pipes B B, leading from the pipe D, and the branch pipes B to the hollow base of the combustion-chamber, the said pipes B B being arranged in the horizontal outflue J of the furnace and beneath the steam-boilers, all substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

AUGUST F. SLANGERUP.
ZACHERY T. HEAP.

Witnesses:
JOHN A. ADAMS,
PERCY D. PARKS.