

A. DESGOUTTES.
Grates for Furnaces.

No. 219,232.

Patented Sept. 2, 1879.

Fig 1.

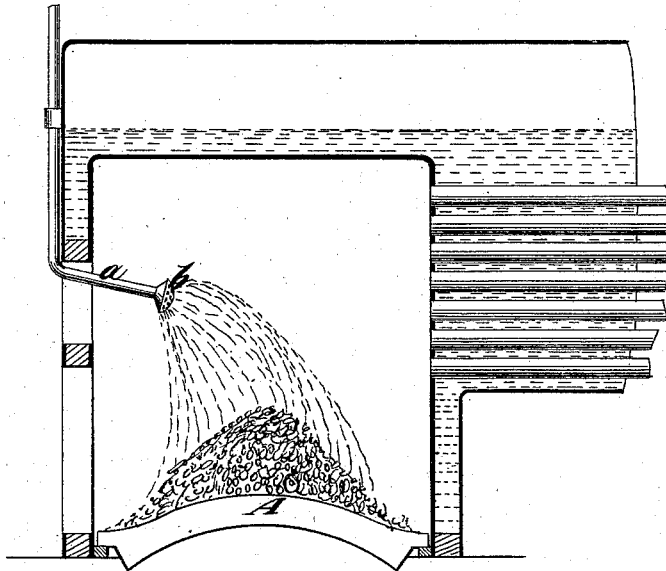
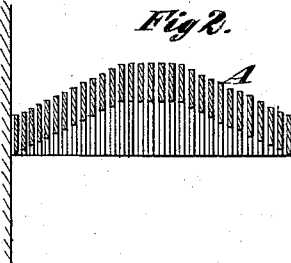


Fig 2.



Figs.

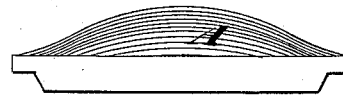


Fig 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

ANTOINE DESGOUTTES, OF PARIS, FRANCE.

IMPROVEMENT IN GRATES FOR FURNACES.

Specification forming part of Letters Patent No. **219,232**, dated September 2, 1879; application filed May 22, 1879.

To all whom it may concern:

Be it known that I, ANTOINE DESGOUTTES, of Paris, in the Republic of France, have invented certain new and useful Improvements in Grates for Furnaces, of which the following is a specification.

My grate differs from those hitherto employed in that it presents a gradual swelling produced by a series of bars having a gradually progressive curvature or flexure from the sides of the furnace toward the center, the bars at the sides being nearly or quite straight, and my improved grate is applicable not only to steam-boiler furnaces, whether fixed or locomotive, but also for various other kinds of industrial furnaces.

In the accompanying drawings, Figure 1 represents a vertical section of a steam-boiler furnace embodying some of my improvements; Fig. 2, a transverse section of the grate of said boiler. Fig. 3 is a side view of such grate. Fig. 4 is a plan of certain of the bars forming said grate.

Similar letters designate corresponding parts in all the figures.

My new grate may be made of rectangular, square, or round form, according to the nature of its application.

As may be seen in Figs. 1, 2, 3, and 4, the curvature of the grate is nothing near the walls, but afterward becomes more marked, and, departing from the horizontal, the bars *A* rise symmetrically by regular gradations to the central part, formed of a number of bars of the same curvature, upon which the fuel is received when fed into the furnace.

It may be understood that by this means I obtain a universal grate-surface without altering the dimensions of the furnace, which is very important in some cases—such as in locomotive-boilers.

In charging my new furnace-grate with fuel, the fuel is fed only upon the central bulged portion of the grate, and hence is surrounded on all sides by incandescent fuel, by which the gases emanating from the fresh fuel are rapidly and thoroughly consumed.

I may produce a better combustion in my furnace by an intermittent or permanent injection of water upon the fresh fuel.

I have represented in Fig. 1 a pipe, *a*, provided with a rose-head or sprinkler, *b*, for distributing the water on the fuel in the form of spray. The water for injection may be drawn from any convenient vessel, or may be injected from the boiler, and the pipe *a* may be provided with a suitable cock or valve for regulating the passage of water through it. This injection prevents the fuel from being brought at once to a high temperature, and effects the almost complete combustion of smoke.

By the use of my grate I am enabled to consume combustibles of little or no value—such, for instance, as cinders, &c.

Applied to locomotives this grate presents many advantages, namely: First, by it the grate-surface may be increased without changing the dimensions of the furnace; second, by charging the fuel upon the center of the grate, metallic furnace-walls will last much longer than when subjected to the changes of temperature resulting from contact with cold fuel; third, it effects an economy of fuel by dispensing with the use of a blower, which forces into the smoke-box residues rich in carbon.

I may, if necessary, employ any known means, such as a fan or ejector, for the purpose of increasing the draft and generating a greater quantity of steam.

What I claim as my invention, and desire to secure by Letters Patent, is—

A furnace-grate presenting a gradual upward swelling, produced by a series of bars having a gradual progressive upward curvature or flexure from the sides of the furnace toward the center, the bars at the sides of the furnace being nearly or quite straight, substantially as and for the purpose herein specified.

A. DESGOUTTES.

Witnesses:

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