

CARL HOFFMANN.

Improvement in Furnace Grate Bars.

No. 123,018.

Patented Jan. 23, 1872.

Fig: 1.

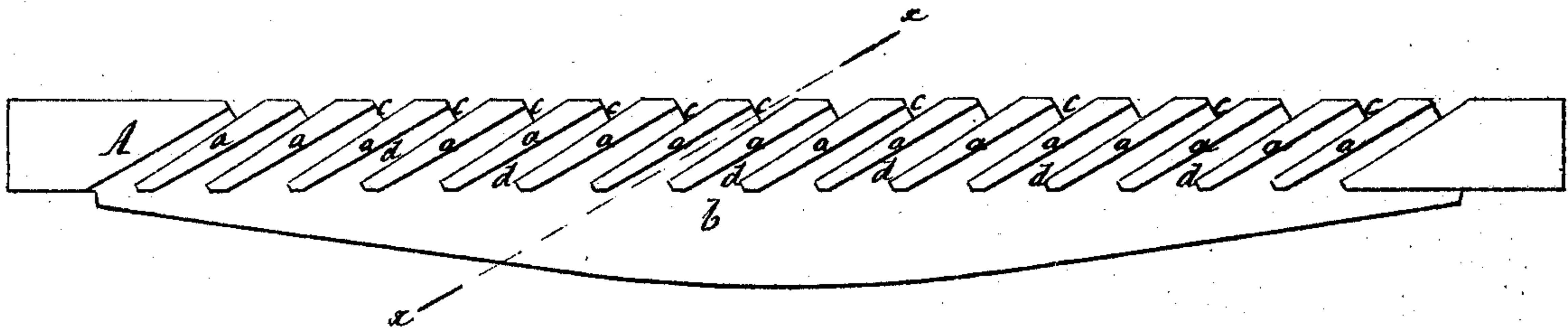


Fig: 2.

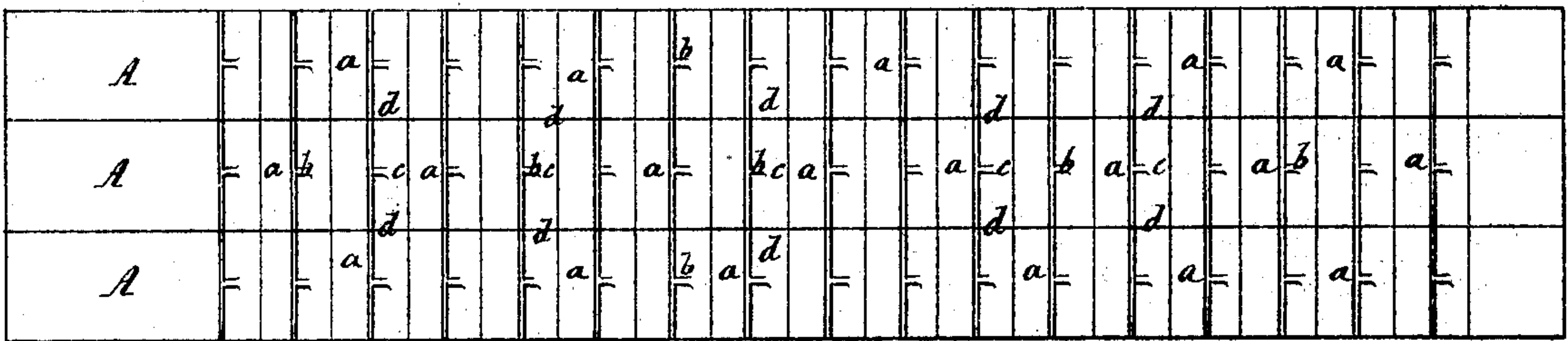
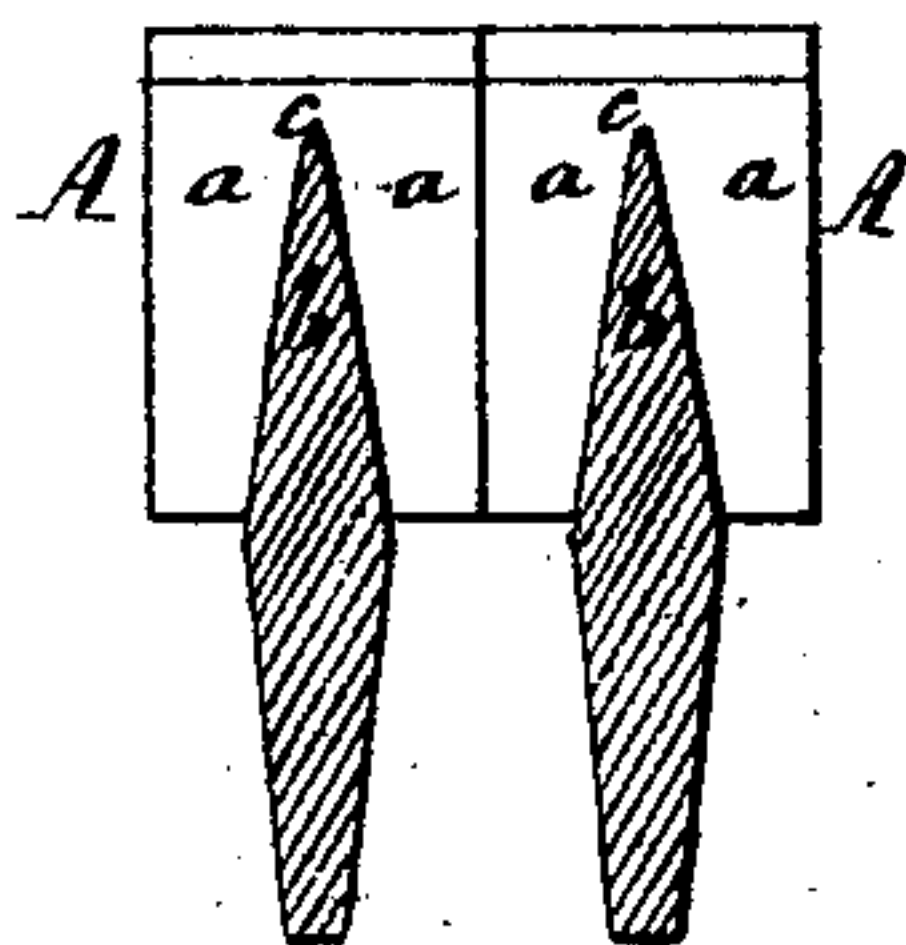


Fig: 3.



Witnesses:  
E. F. Kastenhuber  
Ernst Bilhuber.

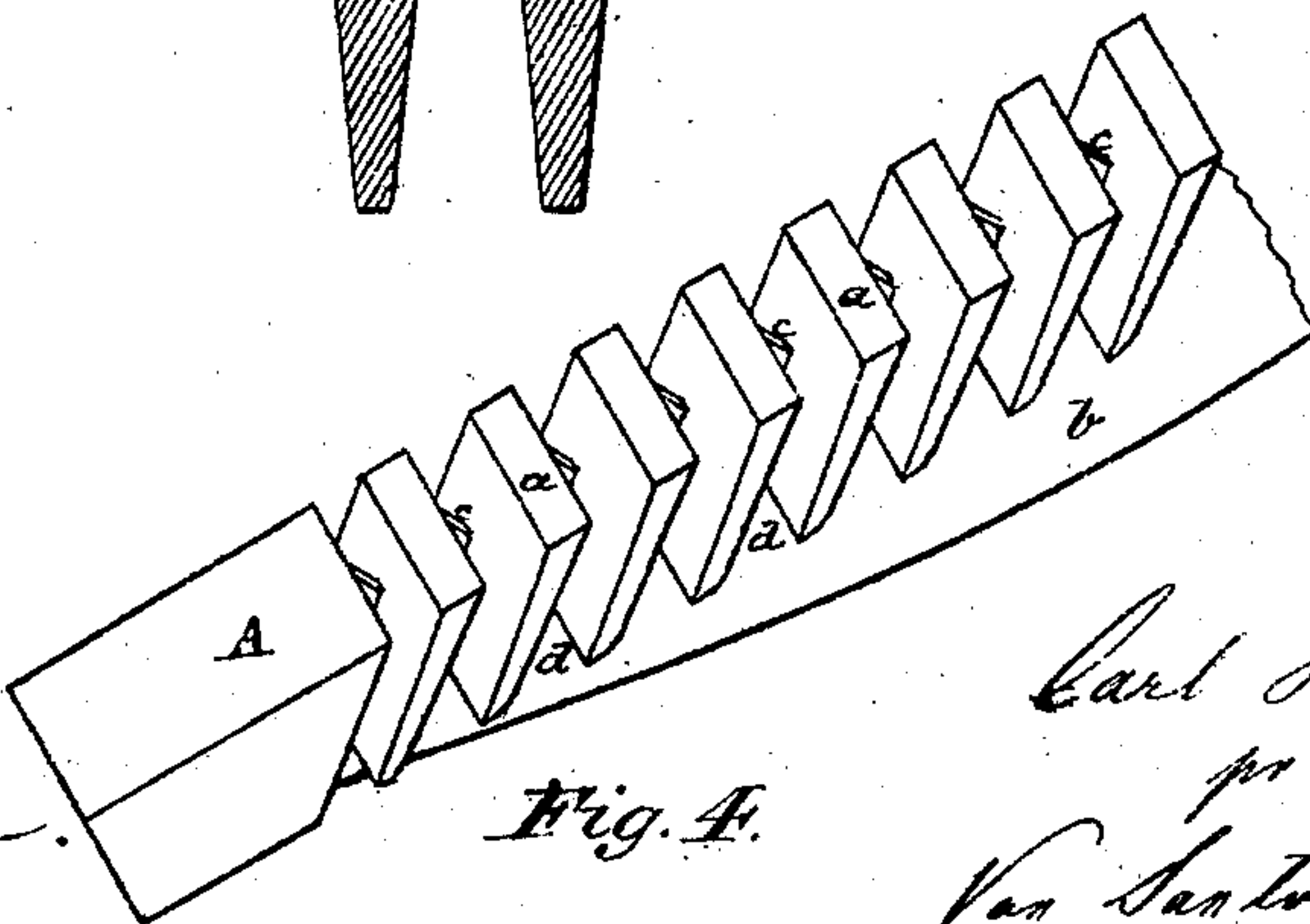


Fig: 4.

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# UNITED STATES PATENT OFFICE.

CARL HOFFMANN, OF NEW YORK, N. Y.

## IMPROVEMENT IN FURNACE GRATE-BARS.

Specification forming part of Letters Patent No. 123,018, dated January 23, 1872.

*To all whom it may concern:*

Be it known that I, CARL HOFFMANN, of the city, county, and State of New York, have invented a new and useful Improvement in Furnace Grate-Bars; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a side view of my invention. Fig. 2 is a plan or top view of the same. Fig. 3 is a transverse section of the same in the plane *xx*, Fig. 1. Fig. 4 is a perspective view of the invention, part being broken away.

Similar letters indicate corresponding parts.

This invention consists in the arrangement of oblique ledges, being chamfered off from both sides and cut down at the top in such a manner that by said ledges oblique air-channels are produced which connect with each other by the depressions in the top edge of the body of the bar, and at the same time by the oblique position of the ledges a grate formed from my bars is capable of supporting comminuted coal or saw-dust, or in fact the most inferior kinds of fuel which cannot be consumed on grates of the ordinary construction.

In the drawing, the letter *A* designates my grate-bar, which is provided with a series of oblique ledges, *a*, projecting from both sides of its body or web, *b*. The ledges are inclined at an angle of about forty-five degrees toward the upper surface of the grate-bar, as shown in Fig. 1; and those portions of the web *b* which are situated between the several ledges are sharpened from both sides, as shown in Fig. 3, and they are cut down so as to form depressions, *c*, between the ledges, as shown in Fig. 1.

When two or more of my grate-bars are placed side by side the adjoining ledges form oblique channels *d*, through which the air has free access to the fuel spread on the grate, and at the same time the oblique position of the ledges prevents the fuel from dropping through said channels. The channels *d*, between the several grate-bars, are in communication with each other by the depressions *c* in the top edge of the web.

On a grate composed of my bars I am enabled to burn the most inferior fuel, such as coal-dust, saw-dust, or even the refuse from locomotives, or from other steam-boilers having grates of the ordinary construction. In practice I use a fan-blower to force air between my grate, and as this air strikes the ledges of the grate-bars it passes up through the oblique channels *d*, and is brought in intimate contact with almost every particle of the fuel spread on the grate, and a perfect combustion is effected, while the fire goes down immediately the fan-blower is stopped, so that the formation of steam can be controlled with great accuracy, and the danger of an explosion from over pressure is materially reduced.

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

1. The grate-bar *A* provided with a series of oblique ledges, *a*, projecting from the sides of the web *b*, substantially as set forth.
2. The arrangement of the oblique ledges *a* projecting from the sides of the web of a grate-bar, the top edge of which is provided with depressions *c* between said ledges, substantially in the manner herein shown and described.

CARL HOFFMANN.

Witnesses:

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E. F. KASTENHUBER.