

P. J. SCHMITT.

GRATE BARS FOR BOILER FURNACES.

No. 190,377.

Patented May 1, 1877.

Fig: 1.

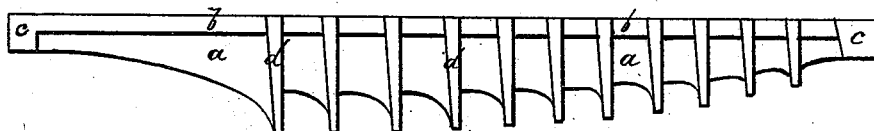
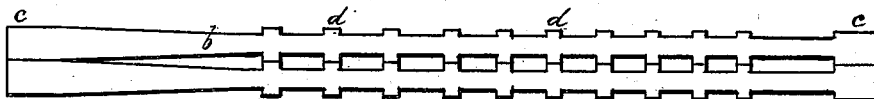


Fig: 2.



Witnesses
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UNITED STATES PATENT OFFICE.

PETER JACOB SCHMITT, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO PETER FISH, OF SAME PLACE.

IMPROVEMENT IN GRATE-BARS FOR BOILER-FURNACES.

Specification forming part of Letters Patent No. **190,377**, dated May 1, 1877; application filed October 12, 1876.

To all whom it may concern :

Be it known that I, PETER JACOB SCHMITT, of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Grate-Bar for Boiler-Furnaces; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing, being part of this specification.

My invention consists in the peculiar construction of a grate-bar, so as to facilitate a more perfect combustion of the gases and smoke, as more fully hereinafter explained.

In the drawing, Figure 1 is a side elevation, and Fig. 2 a plan, of my grate-bar.

This grate-bar consists of a web, *a*, top flanges *b*, spacing or end lugs *c*, and vertical ledges *d*.

The top or face of the bar is straight; the sides of the flanges *b* from the front lug *c* to a point about two-thirds of the whole length of the bar, are parallel, whence they gradually increase to the full width of the spacing-lugs *c* at the extreme rear end. To the sides of the web *a* of the front two-thirds length of the bar are cast a series of vertical ledges, *d*, at equal distance apart, and of increasing length toward the rear end of the bar. These ledges project below the web *a*, so that when a number of these bars are put together their bottom side will have the appearance of a cross-section grate, while its top or face will look like a solid plate perforated by rectangular holes at its front and middle, and by wedge-shaped openings at its rear end.

My object in making the grate-bar of such a peculiar shape is to give to that part of the grate upon which fresh coal is placed a large admission of air, cut up, however, into numer-

ous jets, so as to facilitate the thorough intermixture of the same with the gases generating from the coal, while at the rear end of the grate, where a live coke-fire should be preserved for igniting the gases as they pass over it, I decrease the air-channels, and thereby I prevent a too quick combustion of the coke.

By increasing the length of the ledges toward the rear I have in view to insure the admission of an equal amount of air through all the passages, front and rear, because as the air is coming through the ash-pit door in a horizontal current it is broken up and turned by the bottom ends of said ledges, and as the rear ones reach gradually lower down into the ash-pit, each will have a chance to draw as much air as the other one.

The grate getting heated by the burning coal on its top, the air passing through will be heated to a higher degree where the ledges are longest, thereby insuring a more complete combustion of the gases. The width of the web, being in conformity with the increasing lengths of the ledges, will give to the bar great strength and durability.

What I claim as my invention is—

The grate-bar described, consisting of the top flanges *b*, shaped substantially as shown, the spacing-lugs *c*, the web *a*, and the vertical ledges *d*, projecting below the said web, and increasing in length toward the rear end of the bar, the several parts being constructed and arranged as and for the purposes set forth.

PETER JACOB SCHMITT.

Witnesses:

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