

G. H. CLARKE & C. VAN WAGENEN
Grate-Bars.

No. 210,499.

Patented Dec. 3, 1878.

Fig. 1.

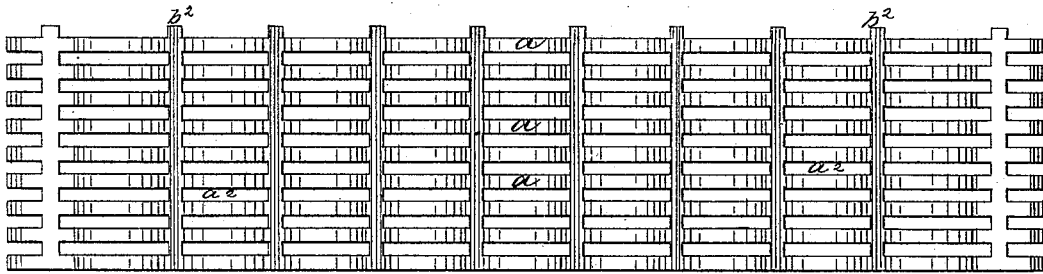


Fig. 2.

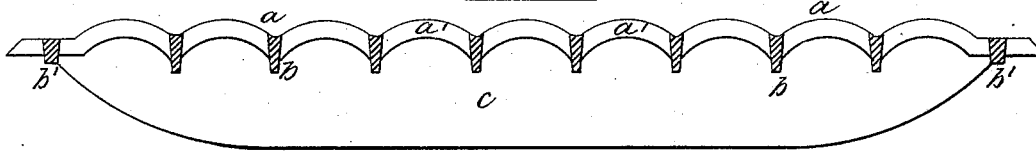
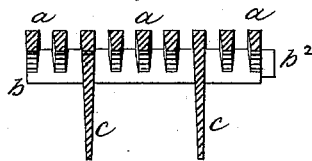


Fig. 3.



Witnesses.

W. Walbank
H. D. Williams

George H. Clarke.
Charles Van Wagenen.
Inventors.
per Alfred Shedd.
Atty.

UNITED STATES PATENT OFFICE.

GEORGE H. CLARKE, OF BROOKLYN, AND CHARLES VAN WAGENEN, OF NEW YORK, N. Y.; SAID VAN WAGENEN ASSIGNOR TO SAID CLARKE.

IMPROVEMENT IN GRATE-BARS.

Specification forming part of Letters Patent No. **210,499**, dated December 3, 1878; application filed October 23, 1878.

To all whom it may concern:

Be it known that we, GEORGE H. CLARKE, of Brooklyn, county of Kings, State of New York, and CHARLES VAN WAGENEN, of New York, county and State of New York, have invented certain new and useful Improvements in Grate-Bars, of which the following is a specification:

This invention relates to furnace grate-bars; and consists in forming a compound bar of longitudinal transversely-arched bars, made narrower at the under side than at the upper side, to facilitate the passage of the air to the fuel. They are connected together by straight transverse bars (made somewhat deeper than the arched bars themselves) at the junctures of the curved sections, the spaces between the arched bars being about equal to the width of the arched bars, and as the lengths of the corrugations are about eight times the width of the arched bars, the air-spaces are a series of parallel longitudinal narrow openings, thus allowing the free application of the rake beneath.

By means of the corrugated surface more air-surface is presented to the fire than with flat-top grate-bars in the proportion of the arcs of the curved sections to their chords, and as the corrugations are in direction lengthwise of the bar no obstruction is offered to the proper slicing of the fire, and the liability of their getting broken during such operation, or warping from unequal heating, is reduced to a minimum.

To make the bars sufficiently strong, one or more of the arched bars is or are continued downward.

The number of the arched bars combined together, the corrugations thereon, and the number of them continued downward, will be governed by the conditions under which they are used.

The transverse bars extend beyond the strip at one side of the bar a distance equal to the width of the air-spaces and meet the straight side of the next bar, so that the whole of the furnace area is perfectly uniform as to position and size of the air-spaces.

To describe our invention more particularly, we will refer to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of our improved grate-bar. Fig. 2 is a longitudinal sectional elevation, and Fig. 3 is a transverse section taken on the line *x x*.

a a represent the longitudinal strips, the sides of which are straight and parallel, as shown in the plan view, Fig. 1, but are formed, as shown at Fig. 2, into a series of curves, *a'*, whose convex sides are upward. These strips *a a* are connected together at the junctures of the curves *a' a'* by means of the transverse bars *b b*, which are somewhat deeper than the strips *a a*. The two end ones, *b' b'*, act as guides to keep the bars on the bearers of the furnaces, the bar resting on the extreme ends of the strips *a a*.

Two of the strips *a a* extend downward and form the deep ribs *c c*, they being lengthwise of the bar, their ends meeting the transverse bars *b' b'*; or the construction of the bar may be described as consisting of a corrugated plate, *a a*, having a series of parallel longitudinal slits, *a² a²*, strengthened transversely by the bars *b b* and longitudinally by the ribs *c c*. The lugs *b² b²* regulate the space between the adjoining bars.

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

The furnace grate-bar hereinbefore described, consisting of a series of transversely-arched bars, *a a*, connected together by the bars *b b* to form a section, and strengthened longitudinally by continuing one or more of the bars *a a* downward, substantially as set forth.

In witness whereof we have hereunto set our hands this 21st day of October, 1878.

GEO. H. CLARKE.
CHARLES VAN WAGENEN.

Witnesses:

W. WALBAUCK,
H. D. WILLIAMS.