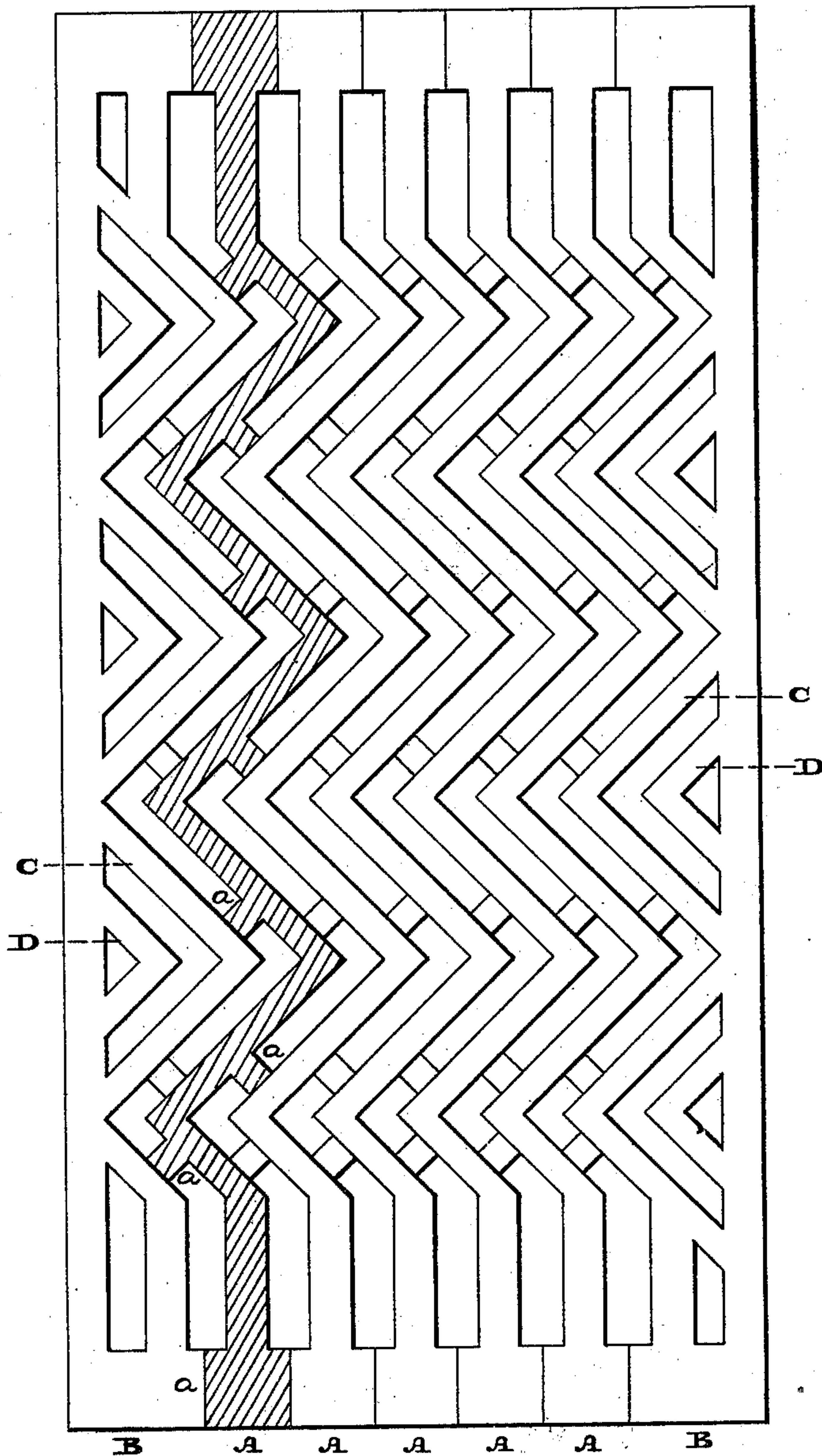


J. COLLINS.
Grate.

No. 223,634.

Patented Jan. 20, 1880.



Witnesses:

So. P. Grant,
W. F. Fisher

Inventor:

Joseph Collins,
by John A. Siedersheim
ATTORNEY.

UNITED STATES PATENT OFFICE.

JOSEPH COLLINS, OF CONSHOHOCKEN, PENNSYLVANIA.

GRATE.

SPECIFICATION forming part of Letters Patent No. 223,634, dated January 20, 1880.

Application filed February 27, 1879.

To all whom it may concern :

Be it known that I, JOSEPH COLLINS, of Conshohocken, in the county of Montgomery and State of Pennsylvania, have invented a new and useful Improvement in Grates, which improvement is fully set forth in the following specification and accompanying drawing, in which the figure is a face view of a grate formed of bars, embodying my invention, one of which is in horizontal section.

This invention consists in a grate composed of zigzag bars extending the whole length thereof, in combination with side bars, also extending the whole length of the grate, and provided with inwardly-extending V-shaped bars, the various bars of the grate being connected and braced by interposed blocks or lugs.

Referring to the drawing, A represents the grate-bar, which is constructed of a continuous zigzag throughout its entire or partial length. A number of the bars A are arranged parallel, and properly supported to form a grate, and held separated the requisite extent by means of lugs *a* projecting from one or both sides of the bars, and cast therewith.

It will be seen that the bar is lengthened, thus increasing the supporting-surface for the fire. The spaces between adjacent bars are lengthened, thus increasing the volume of air admitted to the fire, and the increased length of the bar permits a greater expansion of the metal, whereby the bars are prevented from warping and their durability increased.

B represents the side bars, which are formed

with inwardly-projecting V-shaped pieces C, to accord with the zigzag shape of the bars A, and with said bars are also formed inwardly-projecting V-shaped pieces D, which, constructed smaller than the pieces C, enter the spaces of said pieces C. By this provision the bars B have a series of double V-shaped pieces, which are properly separated to preserve the spacing of the grate, the weight of the fire is superimposed on both the series of pieces C D, and the additional surfaces occasioned by the pieces D produce an increased strength of the bars, thus increasing the service and durability of the grate.

I do not broadly claim a grate having zigzag bars, being aware that that construction is not new; nor do I claim a grate consisting of a number of upper rectangular sections laid upon bars, each of said sections having V-shaped parts, which extend inward from its sides; but

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

In a grate, the combination of zigzag bars A, arranged side by side and extending the whole length of the grate, with side bars, also extending the whole length of the grate, and provided with double V-shaped bars C and D, said bars A and B being separated from one another at each bend or angle by bracing blocks or lugs *a*, substantially as set forth.

JOSEPH COLLINS.

Witnesses:

JOHN A. WIEDERSHEIM,
A. P. GRANT.