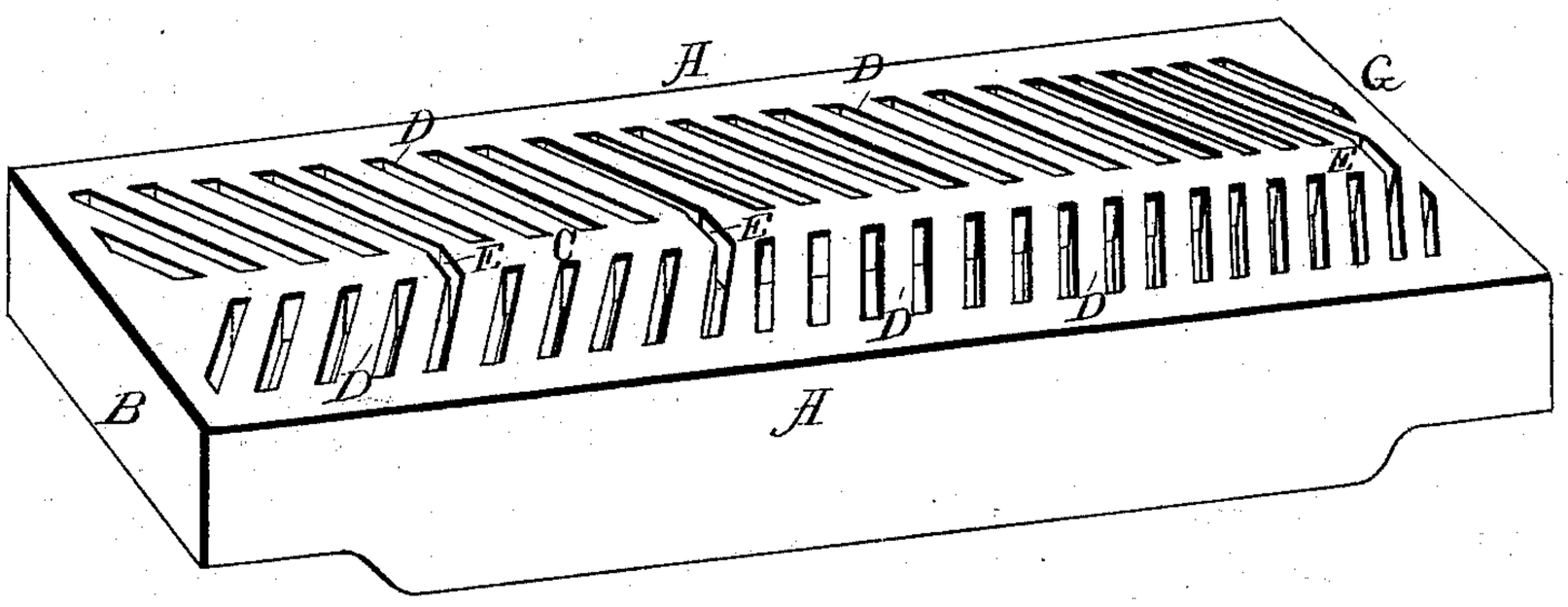
(No Model.)

G. CAMPBELL.

FURNACE GRATE.

No. 261,830. Patented Aug. 1, 1882.



Witnesses
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UNITED STATES PATENT OFFICE.

GARDINER CAMPBELL, OF MILWAUKEE, WISCONSIN.

FURNACE-GRATE.

SPECIFICATION forming part of Letters Patent No. 261,830, dated August 1, 1882.

Application filed September 27, 1881. (No model.)

To all whom it may concern:

Be it known that I, GARDINER CAMPBELL, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Furnace-Grates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters or figures of reference marked thereon, which forms a part of this specification.

My invention relates to improvements in that class of grates which have angularly-arranged cross-bars at uniform distances apart between the respective ends, with the apex of angles of said cross-bars formed midway between the respective sides of the grate.

My improvement consists in providing said angularly-arranged cross-bars with a central supporting-bar, by which the cross-bars are caused to mutually support each other, which central bar is connected with but one of the end bars only at that end toward which the base of the angular cross-bars are formed. Said central bar may also be severed at intervals or formed in short sections, between which are open spaces to permit of the expansion of said central bar and the angularly-arranged cross-bars connected therewith.

My invention is further explained by reference to the accompanying drawing, which represents a perspective view of the same.

A A represent the side bars of the grate. B and G are the end bars. C is the central bar. D D are the series of diagonally-arranged cross-bars. The entire grate is cast in a single rigid piece.

E E E are slots or dividing-spaces formed at intervals in the central bar, C, to permit of the expansion and contraction of the central bar and cross-bars.

It is obvious that were the central bar formed in one piece and connected at both ends rigidly with the end bars, if the expansion of the angularly-shaped bars D were greater than that of the side bars, A A, the effect would be to warp or break the grate; also, that were the cross-bars formed at right angles to the sides when expanded in excess of the end bars, B and G, the grate would be warped or broken thereby.

By the arrangement shown it is obvious that the central bar and the cross-bars may expand and contract independently of the end and side bars without injuriously affecting them, as by the angular arrangement of the bars C the expansion is from the end D toward the end G, and the open spaces in and at the end of the central bar permit of such expansion, thus relieving the grate from the warping tendency to which it would otherwise be subjected by an irregular expansion of its parts.

By connecting the central bar, C, with the cross-bars they are mutually strengthened and supported, and they are thereby rendered less liable to be depressed, twisted, or broken by an excess of pressure upon the apex of the angle formed at the juncture of the two opposing cross-bars.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The furnace-grates herein described, having continuous unbroken sides A A and ends B and G, in combination with the central bar, C, and diagonally-arranged cross-bars D, said central bar, C, being connected at one end to the end bar B and severed from the opposite end bar at its opposite end, leaving space for expansion at the end of said central bar, toward which said cross-bars converge, and adapted to permit of the expansion of said converging cross-bars and central bar independently of said side and end bars, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GARDINER CAMPBELL.

Witnesses:

JAS. B. ERWIN,

E. G. ASMUS.