

A. G. ANDREW.  
FURNACE GRATE.

(Application filed Mar. 7, 1902.)

(No Model.)

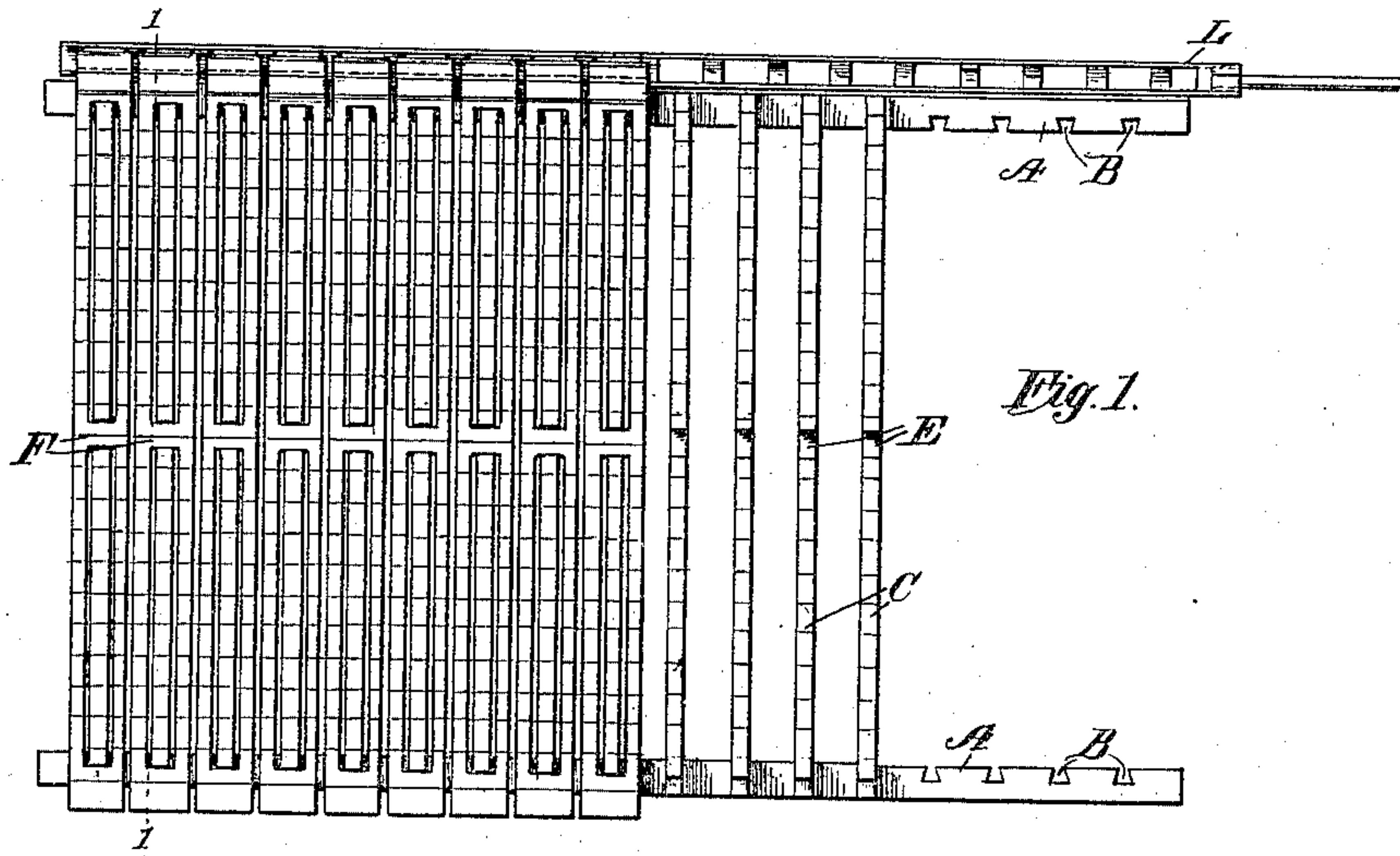


Fig. 1.

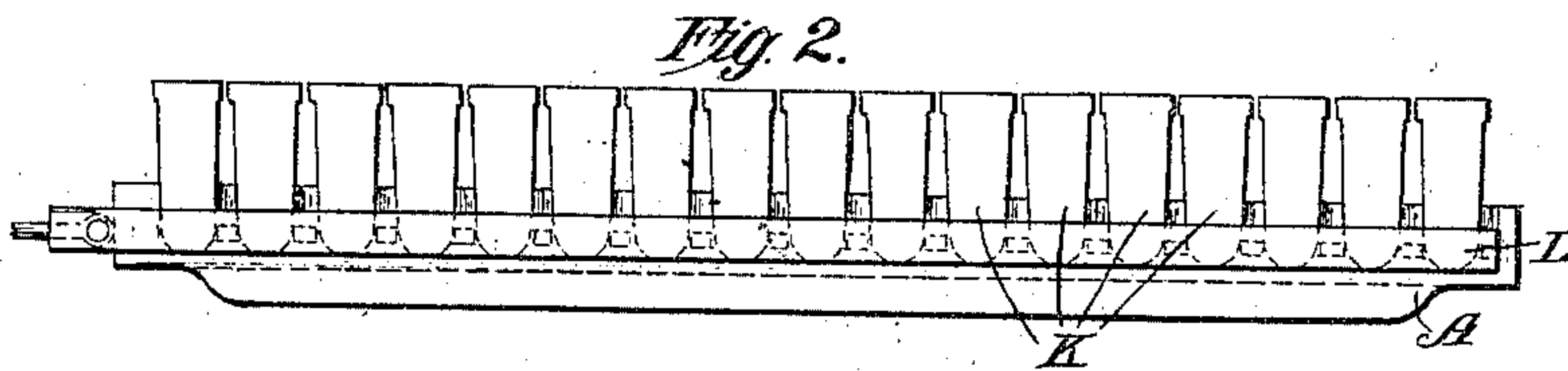


Fig. 2.

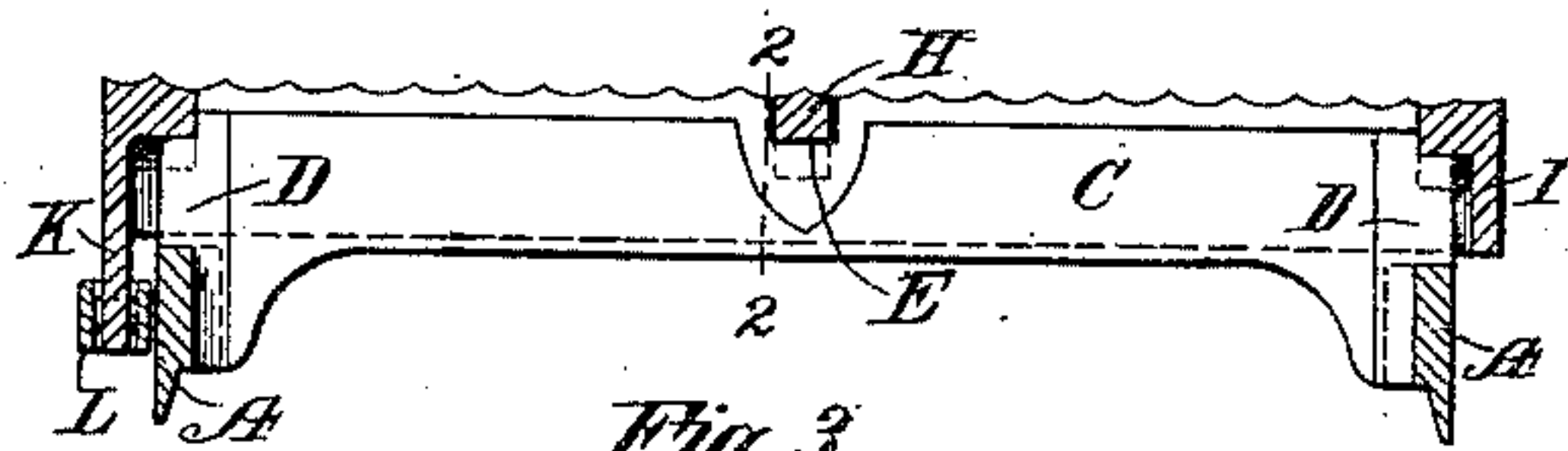


Fig. 3.

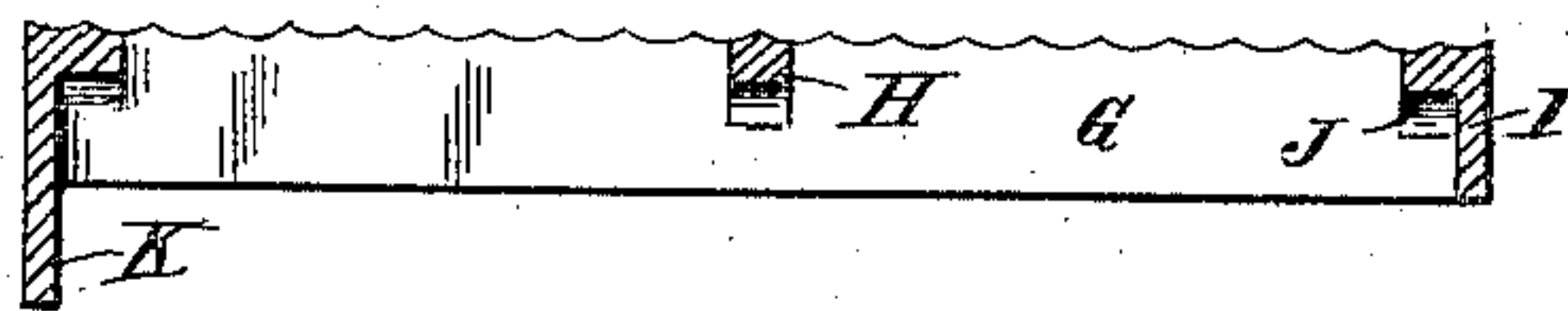


Fig. 4.

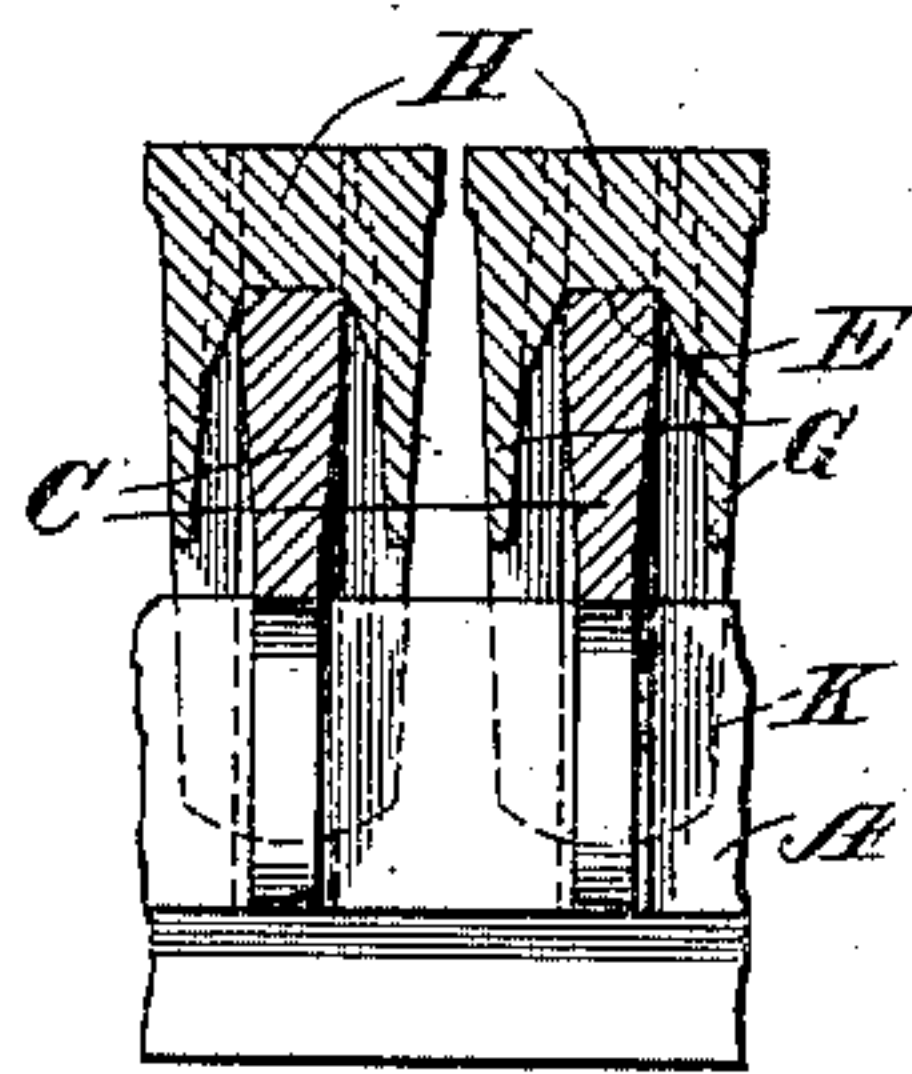


Fig. 5.

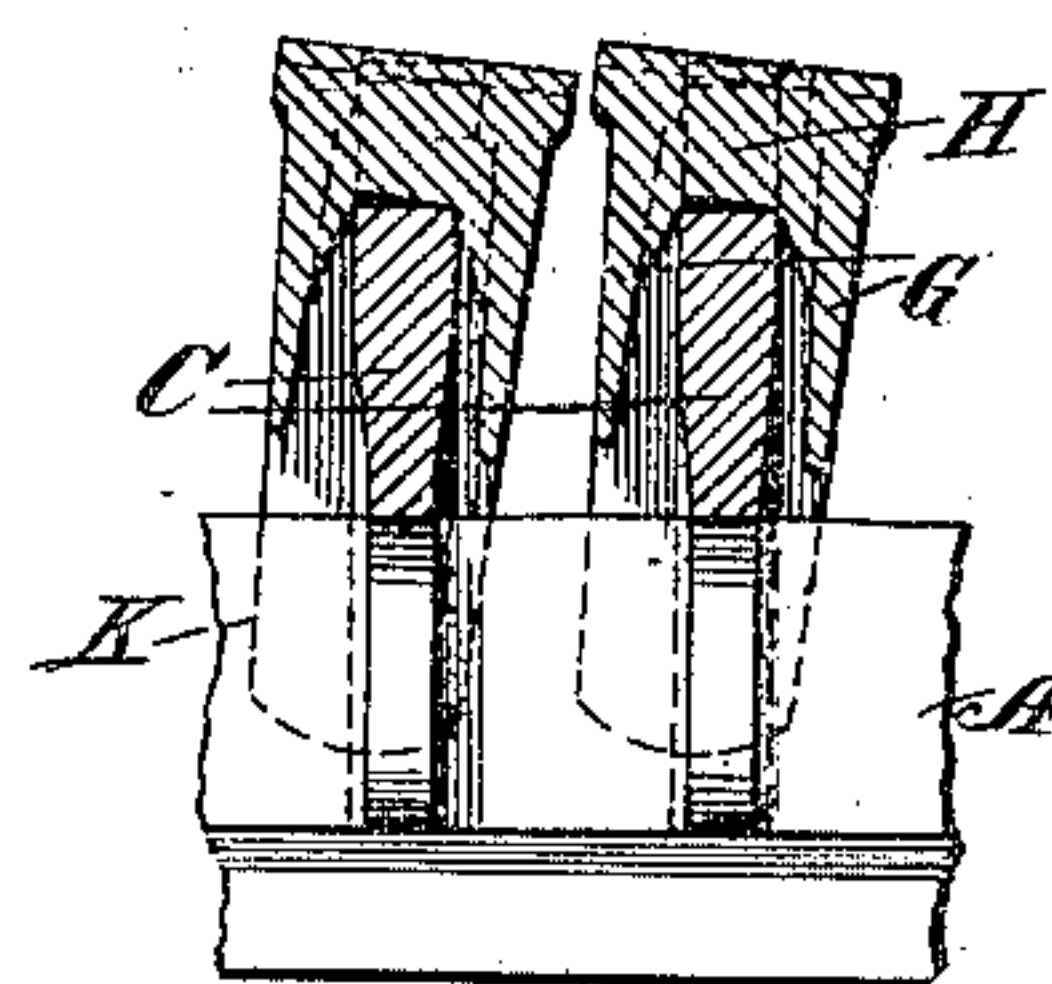


Fig. 6.

Witnesses

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# UNITED STATES PATENT OFFICE.

ALEXANDER GEORGE ANDREW, OF CALUMET, MICHIGAN.

## FURNACE-GRATE.

SPECIFICATION forming part of Letters Patent No. 705,191, dated July 22, 1902.

Application filed March 7, 1902. Serial No. 97,106. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER GEORGE ANDREW, a citizen of the United States, residing at Calumet, in the county of Houghton and State of Michigan, have invented certain new and useful Improvements in Furnace-Grates, of which the following is a specification.

My present invention pertains to improvements in furnace-grates, the construction and advantages of which will be hereinafter set forth, reference being had to the annexed drawings, wherein—

Figure 1 is a top plan view of the grate, certain portions being removed to more clearly illustrate the invention; Fig. 2, a side elevation of the grate; Fig. 3, a transverse sectional view on the line 1 1 of Fig. 1; Fig. 4, a longitudinal sectional view of one of the grate-bars proper; and Figs. 5 and 6, sectional views taken on the line 2 2 of Fig. 3, showing the normal and tilted positions of the bars.

The object of my invention is to provide a simple and durable grate in which any one or more of the bars may be readily replaced.

A further object of the invention is to so form the parts that any material which may pass down between the bars or the bars and their supports will quickly find its way to the ash-pit. At the same time the spaces formed between the adjacent bars and between each bar and its support are substantially equal and are distributed evenly over the entire grate-surface, insuring an even draft up through the entire grate.

Referring to the drawings, A A denote the main supporting or side bars, which find their bearing in suitable masonry or the like. Each bar upon its inner face is formed with a series of dovetailed slots or openings B, in which are fitted the similarly-formed ends of the cross supporting grate-bars C. Said bars, as will be seen upon reference to Fig. 3, are formed with extensions D, the lower faces of which rest upon the side bars after the dovetailed portions have fully entered the main supporting members A. The upper faces of the bars C are preferably though not necessarily fluted or roughened, and at the central portion of each of said faces is a seat or depression E.

F designates the main rocking grate-bar,

which rests upon and is supported by the stationary members C. Said rocking bar, which is formed of a single casting, comprises two parallel members G, connected at their center or mid-length by a cross member or bar H and at their ends by sections or cross-pieces I. As will be seen in Figs. 3 and 4, said end pieces I extend inwardly, forming plates or bearing members J, which when the rocking bar is in position on the stationary bars C rest upon the upper faces of the extensions D, while the cross-bar H finds a bearing in the seat or depression E. The upper faces of the stationary and rocking bars are in the same plane and form an unbroken grate-surface throughout. Each rocking bar is provided at one end with a downwardly-projecting arm K, the arms of the entire series of bars passing into sockets or recesses formed in an actuating member or rocker-bar L, which extends the length of the grate, adjacent to one of the main supporting members A. The outer end of said member L is in operative relation with any means by which it may be reciprocated to rock the movable members of the grate.

As will be seen upon reference to Figs. 5 and 6, the supporting members C and the bars or members G are broadest at their upper side or face, or, in other words, the members converge toward the lower edge. This formation insures clearance between the adjacent members and also permits a greater degree of movement of the bars F than could otherwise take place. Any clinker, slate, or the like which may pass down between the adjacent outer faces of two of the sections or members G will find no lodgment, and the same is true of any material which may find its way through the openings formed intermediate the members G and the stationary supports C.

No bolts, screws, or other fastening devices are necessary or employed in connection with the grate. The side-supporting members are securely fastened or tied together by the cross members G, while at the same time said members are likewise held firmly in place. The rocking members remain in place by gravity, and being supported at each end and also at the middle there is little or no tendency for them to warp or sag.



While I have shown and described the sockets in the side bars as being dovetail in form, it is to be understood that any form of interlocking connection between said bars 5 and the cross-bars may be employed.

Having thus described my invention, what I claim is—

1. In a grate, the combination of a pair of main supporting members; a series of cross-bars carried by said supporting members; a 10 rocking bar carried by each of said cross-bars, the upper faces of the cross-bars and rocking bars lying in substantially the same horizontal plane; and means for actuating 15 said rocking bars.

2. In a grate, the combination of a pair of main supporting members; a series of cross-bars interlocked with said supporting members; a series of rocking bars straddling said 20 stationary cross-bars, the upper faces of the fixed and the rocking bars lying in substantially the same plane; and means for actuating said rocking bars.

3. In a grate, the combination of a pair of 25 main supporting members; a series of cross-bars interlocked with said members; a series of rocking bars straddling said stationary bars and resting thereon at each end and at

a point intermediate the end supports, the upper faces of said fixed and rocking bars 30 lying in substantially the same plane; and means for rocking said rocking bars.

4. In a grate, the combination of a pair of main supporting members; a series of cross-bars interlocked with said members, said bars 35 having reduced ends which extend over and bear upon said supporting members, each of said bars likewise having a seat or depression formed in its upper face; a series of rocking bars supported by said cross-bars, 40 each rocking bar comprising two parallel members provided with a connecting member intermediate their ends, which member rests in the seat or depression formed in the upper face of the corresponding cross-bar, 45 and with a bearing-plate J at each end which rests directly on the upper edges of the ends of the cross-bar; and means for actuating said rocking bars.

In testimony whereof I have signed my 50 name to this specification in the presence of two subscribing witnesses.

ALEXANDER GEORGE ANDREW.

Witnesses:

L. J. SHEPARD,  
J. T. RESSLER.