

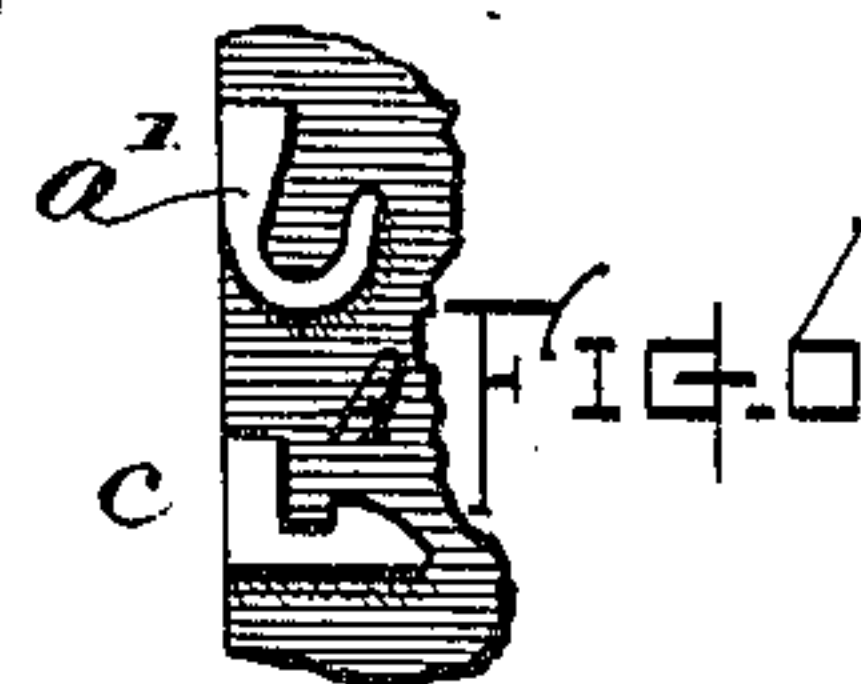
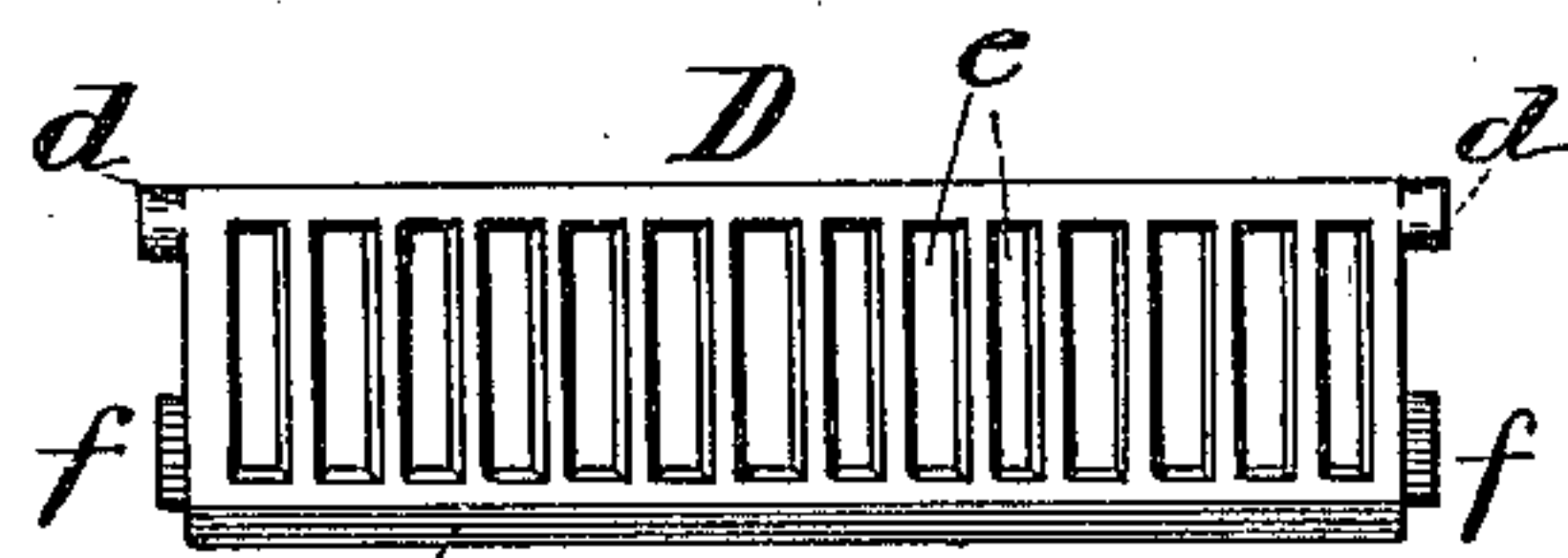
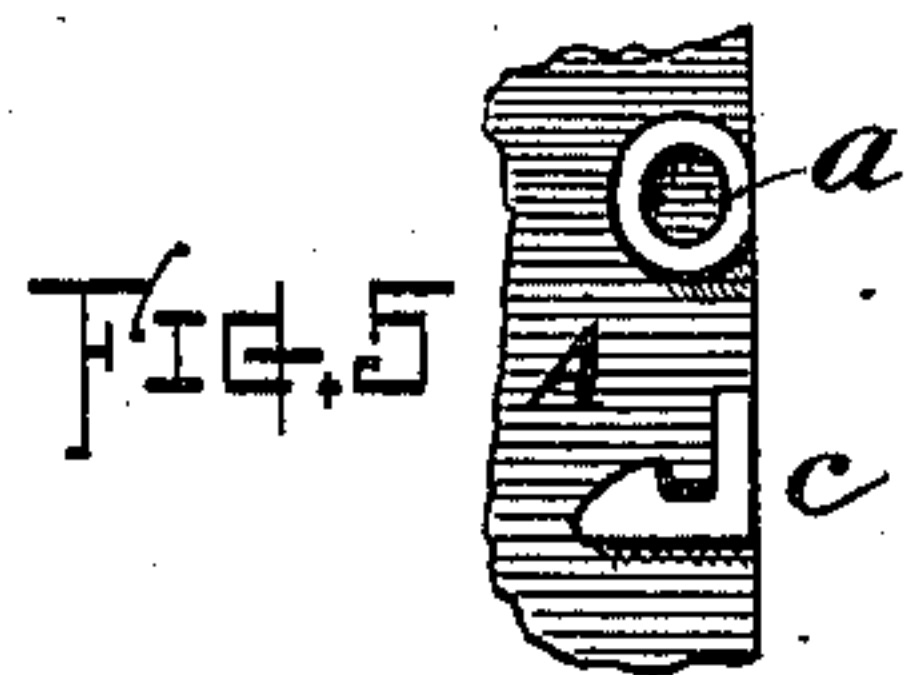
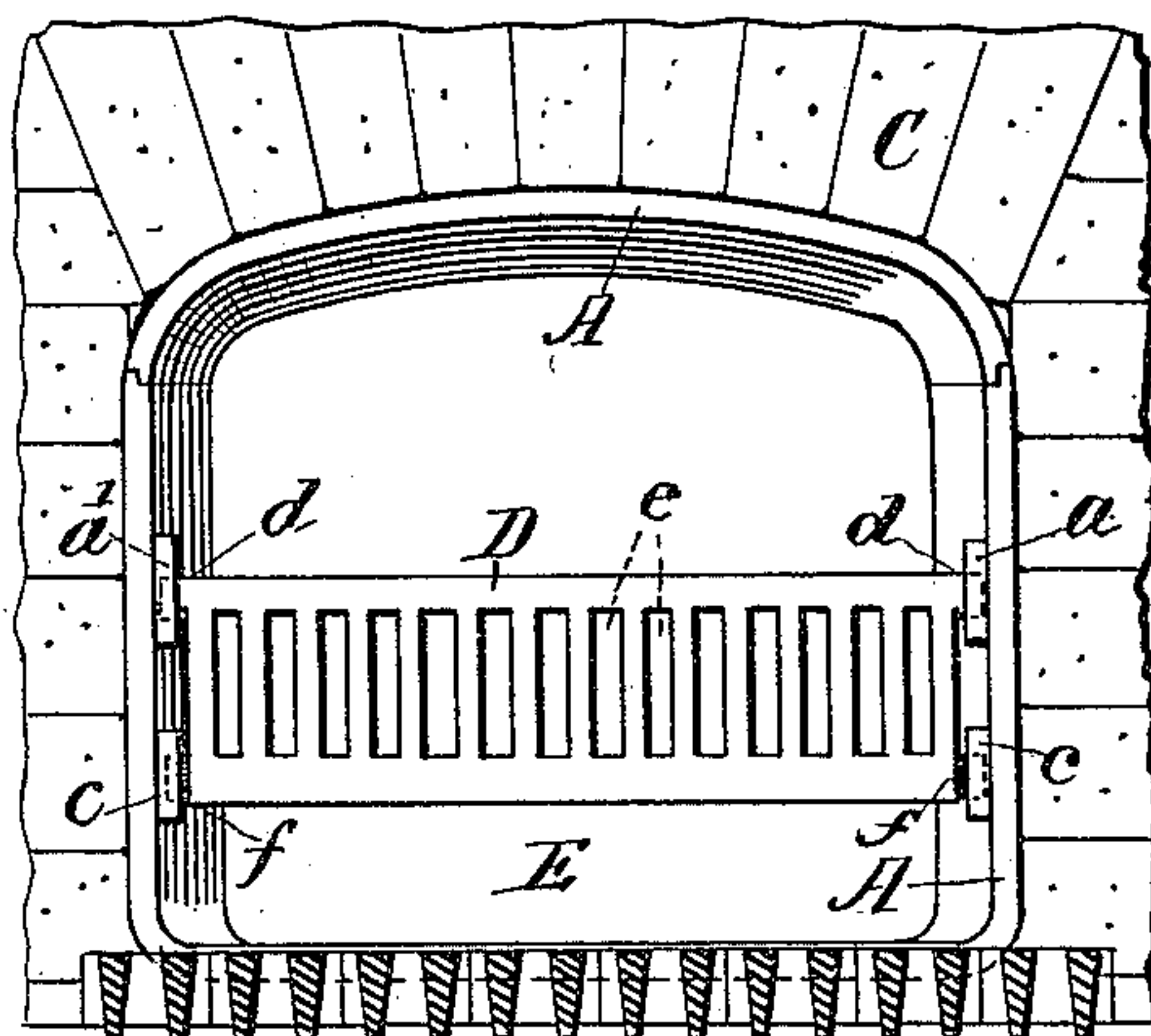
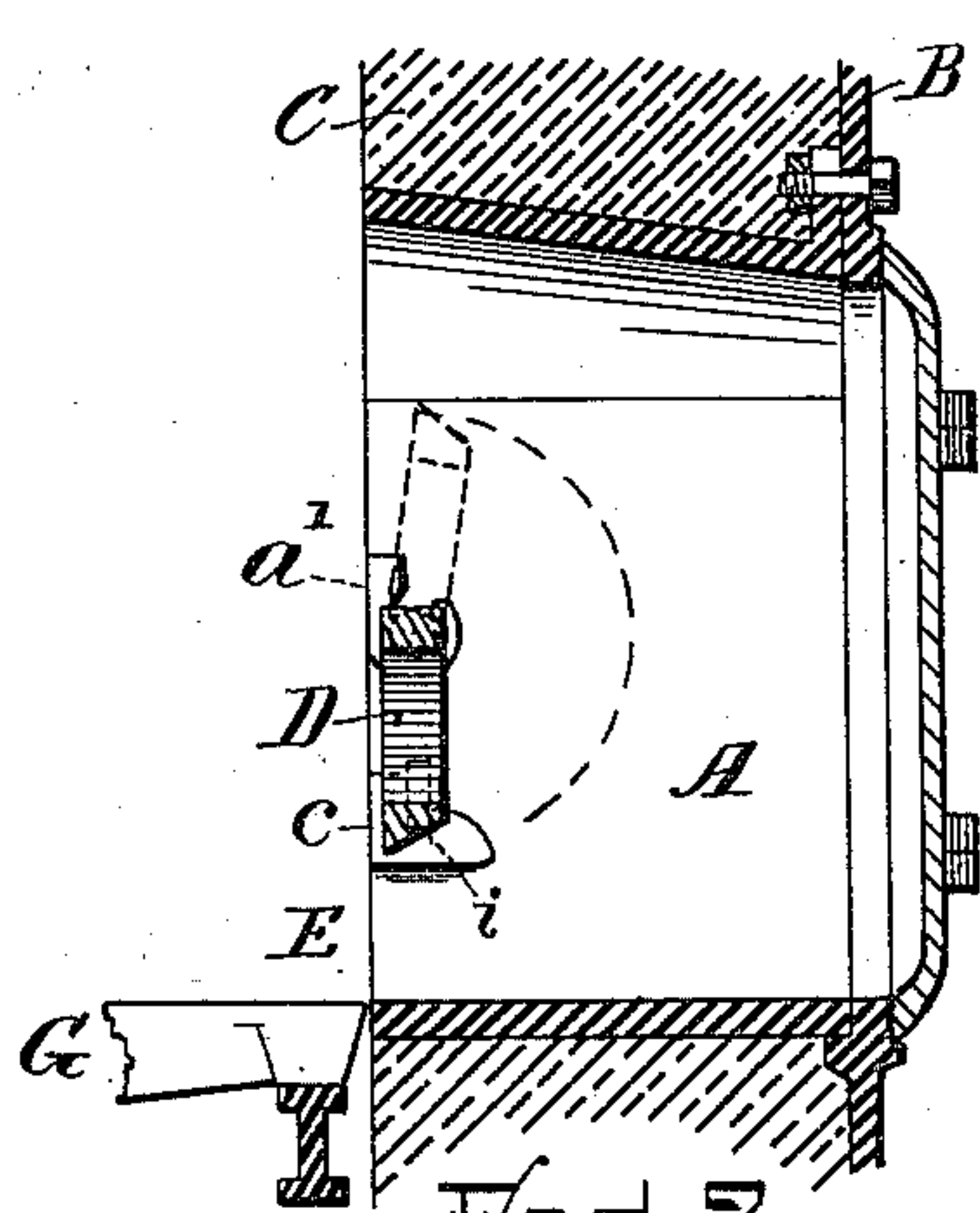
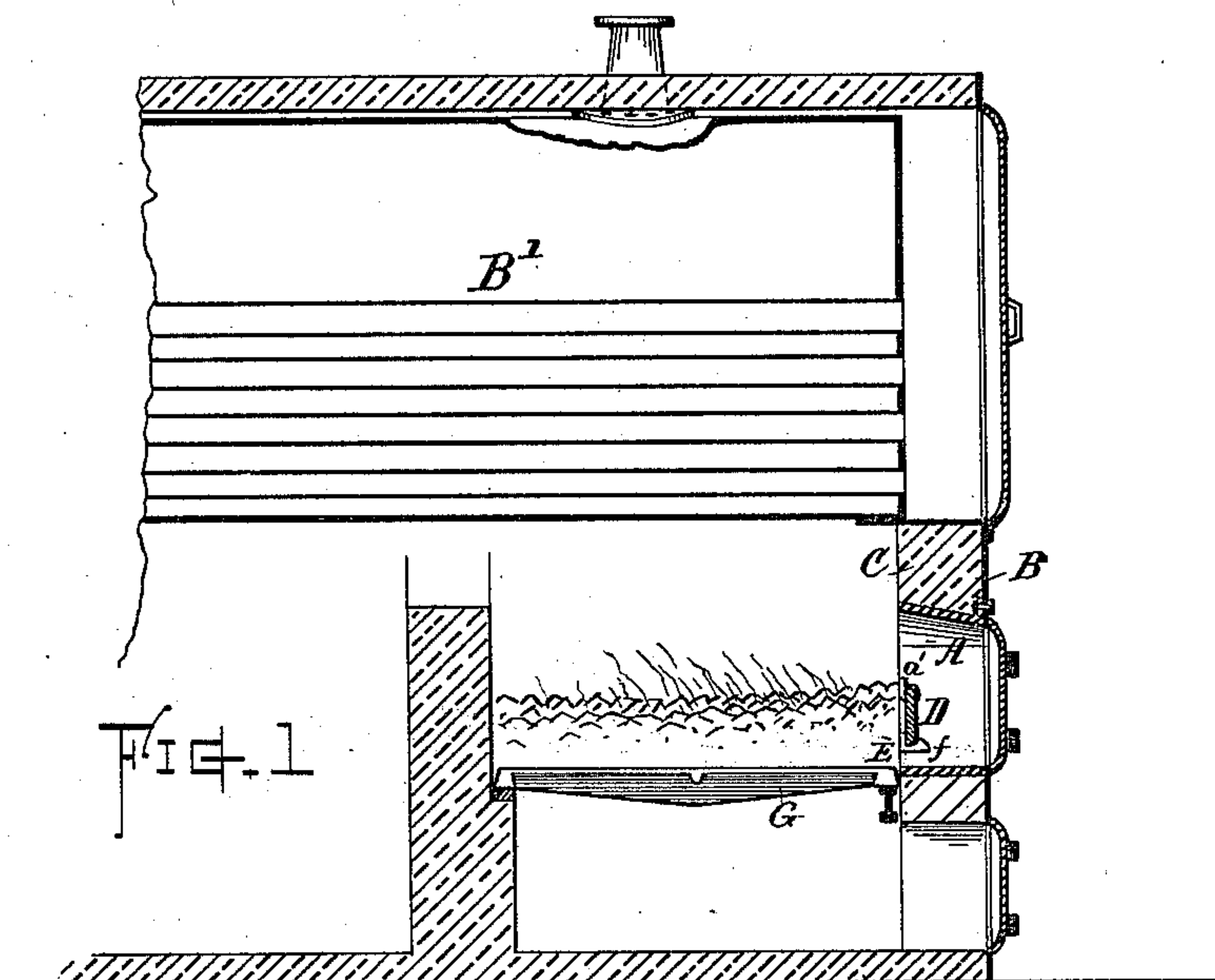
(No Model.)

G. L. ALLEN.

ARCH FENDER FOR STEAM BOILER FURNACES.

No. 408,449.

Patented Aug. 6, 1889.



Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE L. ALLEN, OF WORCESTER, MASSACHUSETTS.

ARCH - FENDER FOR STEAM - BOILER FURNACES.

SPECIFICATION forming part of Letters Patent No. 408,449, dated August 6, 1889.

Application filed May 31, 1888. Serial No. 275,662. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. ALLEN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Arch-Fenders for Steam-Boiler Furnaces, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of my present invention is to provide a fender for the mouth or door arches of steam-boiler furnaces, for supporting the coal across the entrance-space, to give greater or more even depth of fuel, and thereby maintain the fire in better condition along the front of the grate, said fender being also adapted for protecting the arch and for preventing the coal from rolling out upon the hearth when stirring the fire; also, to provide a movable barrier or fender for the purpose above stated, in connection with means for retaining it in position and facilities for allowing the fender to swing upward to facilitate the removal of clinkers and cinders; also, to provide a support that will permit of the ready removal of the fender from the arch when desired. These objects I attain by the mechanism shown and described. The particular subject-matter claimed is herein-after definitely specified.

In the drawings, Figure 1 is a vertical section of a steam-boiler furnace illustrating the nature of my invention. Fig. 2 is a vertical section of my arch and fender. Fig. 3 is an elevation view of the arch and fender looking from the interior of the furnace. Fig. 4 is a front view of the fender-plate separate; and Figs. 5 and 6 show the projections or lugs for supporting the fender at the respective sides of the arch.

Referring to parts, A denotes the metal mouth-piece or arch casting, which is in its general form of well-known construction, it being arranged for attachment to the boiler-front B, and to be laid into the brick-work or boiler-setting C in usual or suitable manner.

D indicates the fender or barrier, consisting of a bar, plate, or grating preferably in width about one-third the height of the arch, more

or less, and of a length that will extend across the space at or near the inner end of the arch. Said fender is best made with a series of perforations *e*, and is provided at its ends with hinging-lugs *d* and latching-lugs *f*. The lower edge of the fender is preferably beveled off on the front side, as at *i*.

Upon the sides of the arch-piece A, near its inner edge, are formed sockets or ears *a a'* for receiving the lugs D, and below said ears are latch-lugs *c*, into which the lugs *f* engage. The openings in the ears *a a'* are of a size that will permit the lifting of the fender sufficiently to swing over the front lip of the lugs *c*. The lugs and ears are disposed in such position on the sides of the arch that the fender will stand with its bottom edge about one and one-half inch above the bed or bottom of the mouth-piece or archway, or so as to leave sufficient space at E below the fender for inserting the bar or implement for slicing or stirring the fire along the surface of the grate-bars G. The top of the fender is sufficiently far below the top of the arch to admit of the fuel being thrown into the furnace over the fender. One of the ears *a'* is formed open (see Fig. 6) to permit of the end of the fender or plate being lifted out when it is desired to remove it from the arch. When down in position, as shown in full lines, Fig. 2, the fender is held rigid by the lugs *c* and *f*, but by slightly raising the fender it becomes unlatched from the lugs *c*, and can be turned or swung up on the lugs *d* as an axis into the upper part of the arch, (see dotted lines, Fig. 2,) to permit the removal from the fire of large clinkers, or for other purpose.

Among the advantages incident to my invention it may be mentioned that the fuel is by the fender maintained at a more even thickness over the front of the grates and without extending the mass into the arch or mouth. Thus, while insuring a better fire along the front, the arch-piece is less liable to become burned out. The open-work bar or perforated fender keeps the fire fresh and bright at the front of the grate, and the space beneath the fender permits of "slicing" the fire without drawing the coal out upon the hearth.

This fender is of great utility and convenience in connection with the furnaces of boil-

ers employed for heating buildings, as well as for other boiler-furnaces, and especially in situations where it is desirable to maintain a depth or body of fire run at comparatively low temperature, as the fender supports the fuel in a manner that prevents the fire dying out at the front when left for a long time without attention.

I am aware that in some instances the front part or fender in open-fire-place grates have heretofore been made capable of removal. It will, however, be understood that a removable fender, broadly considered, or in such situation, is not included within the intended scope of my claims, as my invention relates especially to a fender adapted for and essentially in combination with the mouth-piece or doorway-arch in a steam-boiler furnace or equivalent furnace structure wherein the furnace is provided with a thick front wall through which the doorway-arch or mouth-piece extends, in the manner substantially as illustrated.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the mouth-piece arch in a steam-boiler furnace, of the perforated fender-plate extending across the inner end of the arch, as shown, and having its ends rigidly supported in connection with said arch by interlocking lugs that maintain said fender in upright position, substantially as and for the purposes set forth.

2. The combination of the mouth-piece arch provided with the ears *a a'* and latch-lugs *c*, formed on the inner end thereof, as shown, and the fender-plate arranged as a barrier across the interior of the arch and furnished at its ends with projections *d*, that engage said ears *a a'* and form hinges on which said fender is adapted to be inverted within the upper part of the arch, and projections *f*, that latch into the latch-lugs *c* and sustain the lower edge of said fender when in normal position, substantially as and for the purpose set forth.

3. The combination, with the grate *G* and arched mouth-piece *A*, having the closed supporting-ear *a*, an open ear *a'*, formed on the opposite inner sides thereof at central position of its height, and the latch-lugs *c c* below said ears, of the removable fender-plate having at its upper corners projecting studs *d*, that engage with said ears, and at its lower corners lugs *f*, that engage said latch-lugs, as set forth, whereby said fender-plate is sustained across the lower part of the mouth-piece, with the open spaces above and beneath the fender, substantially as shown and described.

Witness my hand this 19th day of May, A. D. 1888.

GEORGE L. ALLEN.

Witnesses:

CHAS. H. BURLEIGH,

ELLA P. BLENUS.