

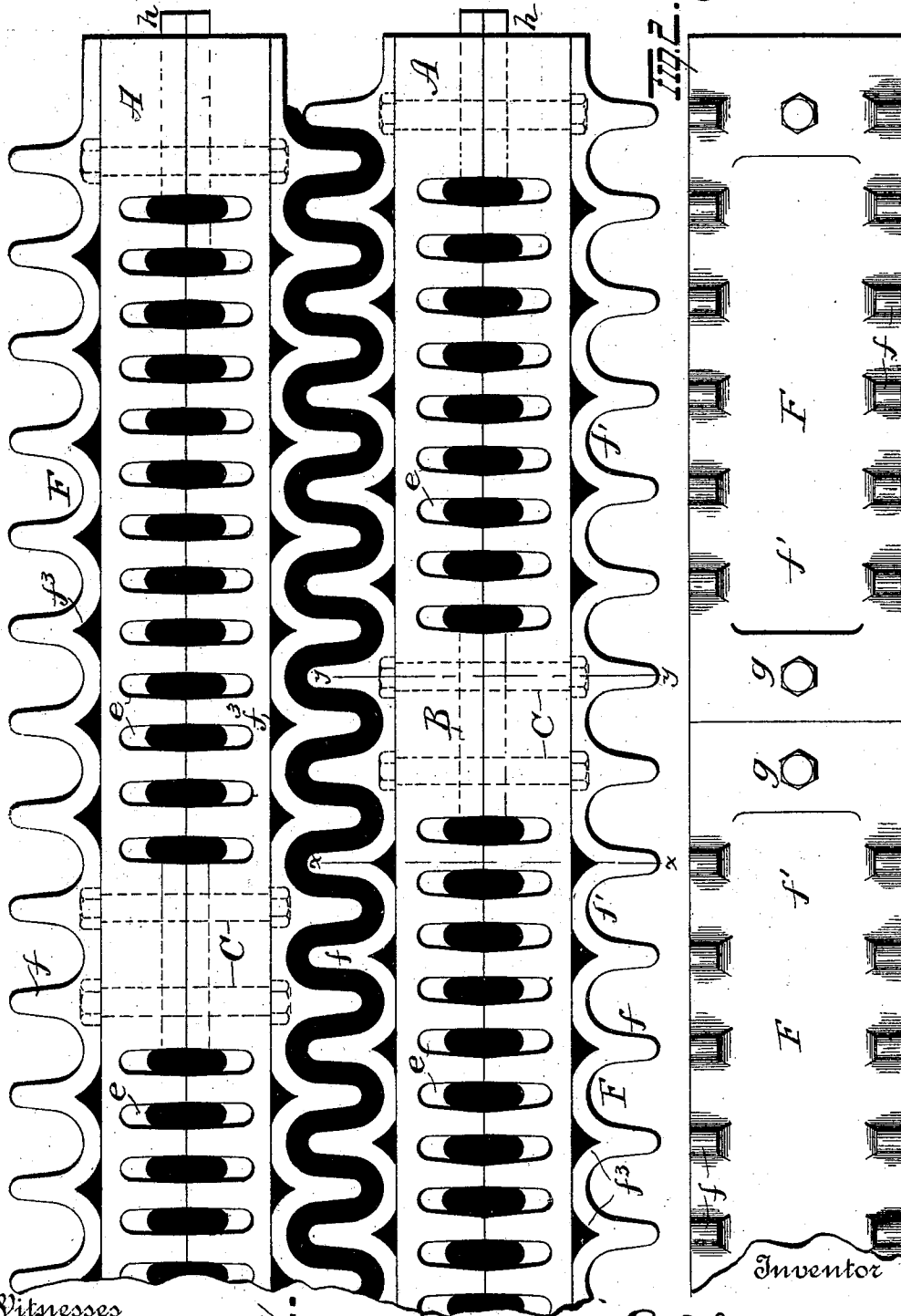
(No Model.)

2 Sheets—Sheet 1.

A. SHEARER.
GRATE.

No. 503,169.

Patented Aug. 15, 1893.



Witnesses
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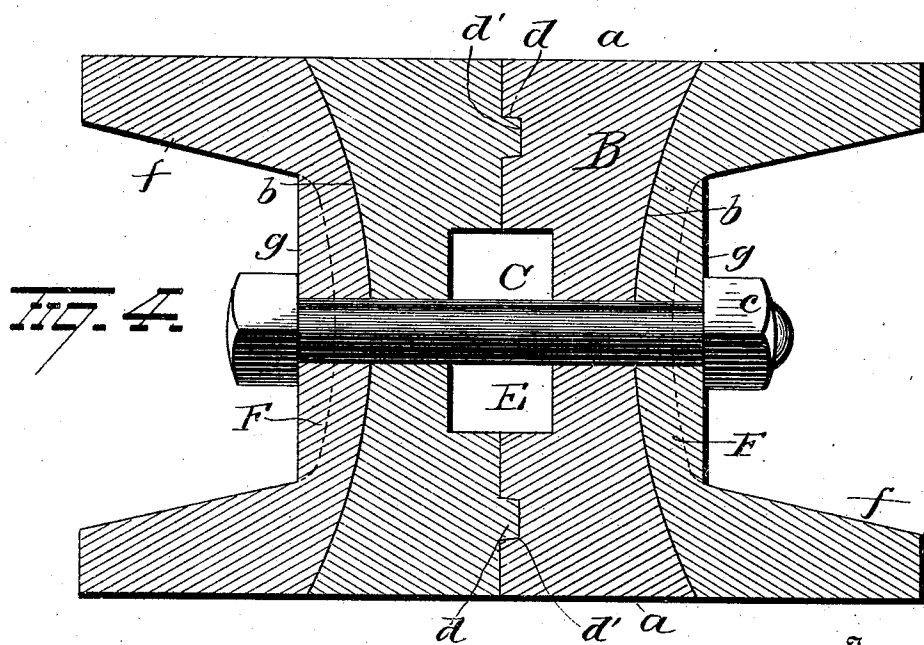
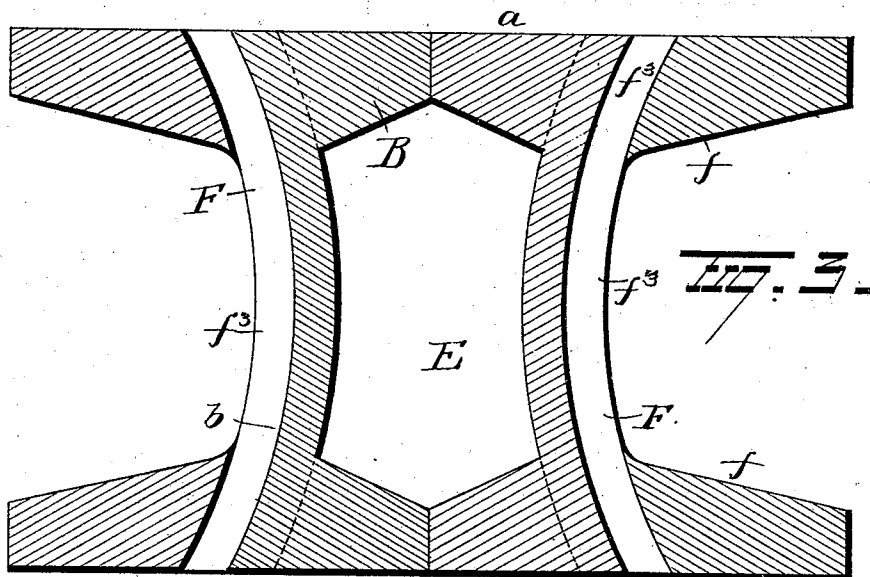
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A. SHEARER.
GRATE.

2 Sheets—Sheet 2.

No. 503,169.

Patented Aug. 15, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

ANDREW SHEARER, OF PHILADELPHIA, PENNSYLVANIA.

GRATE.

SPECIFICATION forming part of Letters Patent No. 503,169, dated August 15, 1893.

Application filed November 15, 1892. Serial No. 452,074. (No model.)

To all whom it may concern:

Be it known that I, ANDREW SHEARER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in 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.

My invention relates to an improvement in grates and more particularly for use in steam boiler and other large furnaces, and it consists in the details of construction and combinations of parts as will be more fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view showing two bars arranged side by side in the position they occupy when set up in a fire box. Fig. 2 is a view in side elevation of one of the bars. Fig. 3 is a view in transverse section on the line *xx* of Fig. 1, and Fig. 4 is a view on the line *yy* of the same figure.

The grate is made up of a series of bars A, each of which is composed of a body B having two flat faces *a* on which the fuel rests, and two faces or sides *b*, the latter being curved or convex transversely as shown. Each bar is reversible—that is to say, it can be given a half rotation to bring the under flat side up or it can be completely rotated as desired. In any event the two flat sides are alike and either can be used as the top. This body B while it can be of one piece is preferably made in two sections secured together at their ends, and at intervals between the ends by bolts C, and nuts *c*. The sections composing the body are further secured against movement by the projections *d* formed on one section of the body, entering recesses *d'* formed on the other section. The body is hollow throughout its entire length forming a continuous air passage E through same, and the top and bottom surfaces are slotted as at *e* which slots communicate with the central longitudinal air passage E for the passage of air to and from the hollow bars. The central air passage E is reduced in size at the points where the bolts C pass through the grate, so

as to strengthen the bars at these points, and the slots *e* on the two flat faces of the bars are omitted at these points for the same purpose, as clearly shown in Fig. 1.

F are the sides of the bars, preferably removable and each side made up of a number of small sections *f'*. Each section *f'* consists of a body having upper and lower projections *f* the outer faces of which are in line with the corresponding faces of the body A, thus forming flat surfaces on which the coal or other fuel rests while burning. The rear faces of the sections *f'* are curved to correspond with the curvature of the sides of the body B and are secured to said body by the bolts C which latter as before stated also secure the two sections of the body together. Each section *f'* is grooved as at *f³* at a point immediately behind the projections *f*, the said grooves extending from one flat face of the bar to the other thus forming continuous passages for the passage of air. The sections *f'* are placed end to end against the body and at their ends where the securing bolts pass are provided with flattened seats *g* (see Fig. 3) for the heads of the bolts and nuts.

When the bars are assembled within a furnace, the projections on one side of a bar rest between the projections on the adjacent side of the next bar sufficient space being left between the projections to permit of the free turning of the bars and also for the free passage upward of air. The bars are preferably disconnected and each is provided with an angular end *h* to which a wrench or crank can be attached for tilting same. By this arrangement any one of the bars can be turned to dislodge clinker or ashes thereon thus enabling me to clean off any portion of the grate without disturbing the fire over the other bars, and by constructing the bars in sections, and more particularly by making the sides having the interlocking projections thereon in sections and independent of the body of the bar I am enabled to replace an injured section at a small cost and thus make the bar practically as good a new.

It is evident that changes in the construction and relative arrangement of the several

parts might be made without avoiding my invention and hence I would have it understood that I do not restrict myself to the particular construction and arrangement of parts shown and described, but,

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

1. A hollow grate bar composed of a hollow body portion having slots in the top and bottom in communication with the hollow interior, removable side sections, said side sections having projections and grooves behind the projections, and means for holding the sides and body portion together, substantially as set forth.

2. A grate bar comprising a body composed of two sections adapted to be secured together, said sections having a hollow interior and slots at top and bottom, and removable sides having grooves in their inside faces, and means for securing the sides to the body portion, substantially as set forth.

3. A hollow grate bar consisting of a body made of two longitudinal sections, and removable side sections each section having projec-

tions adapted to rest between projections on next adjacent bar.

4. A hollow grate bar consisting of a body made in two sections, and removable sides, each side being composed of a series of sections, the said sides and body sections being secured together, substantially as set forth.

5. A grate bar having removable side sections, the latter being provided with projections arranged at regular intervals and with slots located at the bases of said projections.

6. A grate bar having flat top and bottom, and curved or concaved sides and removable sections secured to said concaved sides, the said removable sections having projections at their upper and lower edges the outer faces of said sections being concentric with the outer side faces of the bar.

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

ANDREW SHEARER.

Witnesses:

ALEX. THOMPSON,
GEORGE W. CLEMENT.