G. D. PUTNAM.

Grate-Bars.

No. 161,899. Patented April 13, 1875.

Fig. 1.

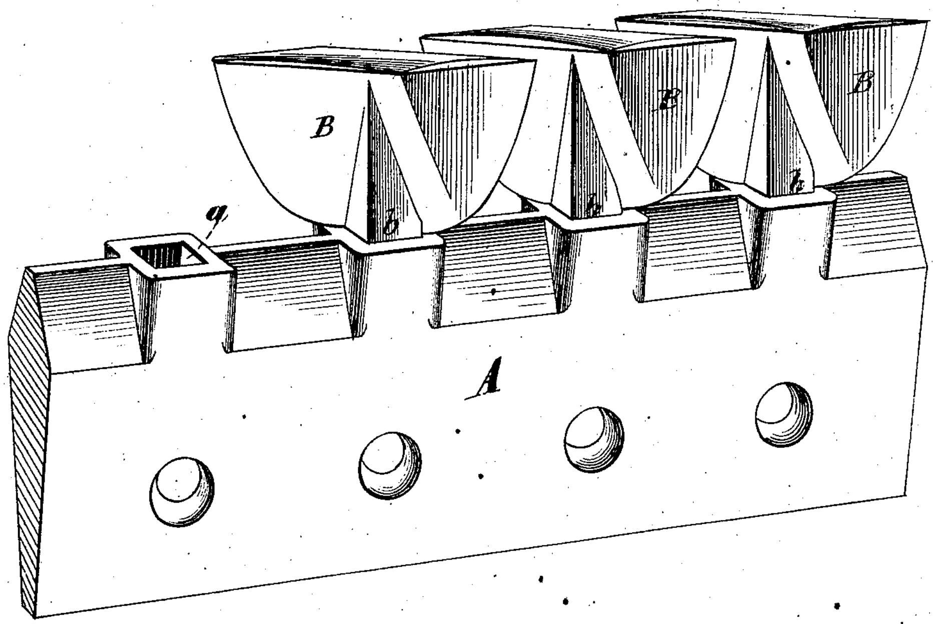
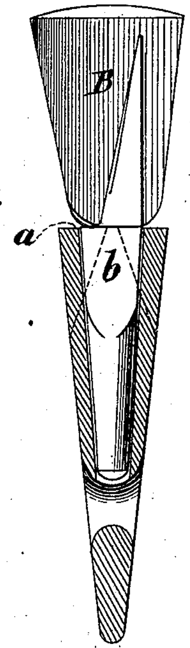


Fig. 2.



Witnesses.

A. Ruppert

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UNITED STATES PATENT OFFICE.

GEORGE D. PUTNAM, OF SALEM, MASSACHUSETTS.

IMPROVEMENT IN GRATE-BARS.

Specification forming part of Letters Patent No. **161,899**, dated April 13, 1875; application filed September 23, 1874.

To all whom it may concern:

Be it known that I, GEORGE D. PUTNAM, of Salem, in the county of Essex and State of Massachusetts, have invented a certain Improvement in Grate-Bars, of which the following is a specification:

This invention relates to that class of grate-bars which are made with a web which supports a series of independent projections which form the fire-surface of the grate, and which, being most exposed to the heat, are liable to be first destroyed.

The advantage is manifest. It is desirable that the points be readily attached and detached, and also, that when in place they may have such stability as will permit the fires to be freely raked without displacing the points.

This invention consists not broadly in the use of such points, but my improvement is limited to the peculiar construction, which, I believe, makes the bars better adapted for practical use.

In the annexed drawings, Figure 1 is a perspective view of one form of my improvement in grate-bars. Fig. 2 is a transverse section of the same.

The same letters of reference are used in all the figures in the designation of identical parts.

The grate-bar illustrated is composed of a web, A, surmounted by a row of teeth, B, which form the fuel-supporting surface, and are of rhombic or rhomboidal form, and are so arranged that two parallel sides run parallel to the web. The teeth shown in Figs. 1 and 2 are provided with square shanks *b*, fitting corresponding square sockets *a* in the web, by which means the teeth are connected to the web, their shanks fitting loosely in the sockets, so that they may be easily inserted or removed.

The projections being held in the web by a long shank fitting loosely into a socket passing through the web, there is not only an increased radiating surface furnished to the web for keeping down its temperature, but the points are held more firmly than by modes heretofore known for attaching the points by gravity merely, and in raking the fires they are less liable to be displaced than in cases in which a point on the upper edge of the web fitted into a slight cavity formed in the base of the projections which constituted the upper surface of the bars.

The sockets *a* are extended through the web, or, if that is feather-edged so as not to permit the sockets to pass to the lower edge, then they may be made to connect with transverse holes, as shown. The purpose of this is to permit the cold air of the draft to pass upward into the sockets, and around the stems *b*, thus tending to keep down the temperature of the web A. This circulation will be sufficiently attained by reason of the rough sand-surfaces of the stems and sockets.

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

In combination with the web A, constructed with the sockets *a* passing through it, the points or teeth B, constructed with shanks *b* fitting said sockets, substantially as set forth.

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

GEORGE D. PUTNAM.

Witnesses:

D. E. SAUNDERS, Sr.,

ERASTUS DENNETT.