

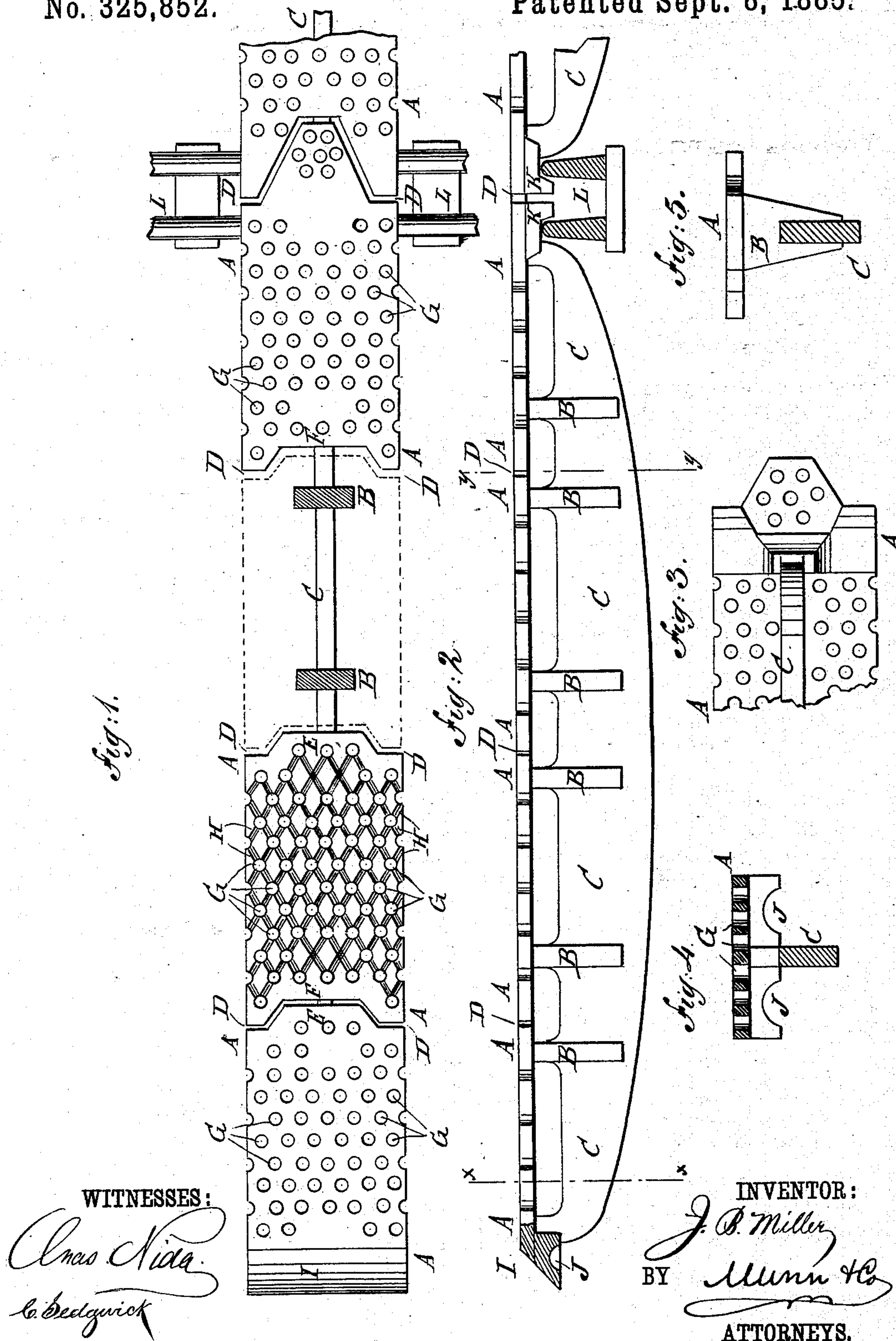
(No Model.)

J. B. MILLER.

GRATE BAR.

No. 325,852.

Patented Sept. 8, 1885.



N. PETERS, Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH B. MILLER, OF WILKES-BARRÉ, PENNSYLVANIA.

GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 325,852, dated September 8, 1885.

Application filed March 28, 1885. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH B. MILLER, of Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Improvement in Grate-Bars, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view, partly in section, of a part of one of my improved grate-bars. Fig. 2 is a side elevation of the same, partly in section. Fig. 3 is an under side view of a part of a bar-section. Fig. 4 is a cross-section of one of the bars, taken through the line *x x*, Fig. 2. Fig. 5 is a sectional end elevation of one of the bars, taken through the line *y y*, Fig. 2.

The object of this invention is to provide grate-bars constructed in such a manner that the said grate-bars will not be injured by the expanding and contracting of the said bars when heated and cooled.

The invention relates to a grate-bar made with perforated and grooved top plates having narrow spaces between their adjacent ends and cast upon lugs cast upon the supporting-ribs, whereby air can circulate freely through and around the said top plates. The adjacent ends of the top plates of the grate-bar are provided the one end with a projection and the other end with a corresponding recess. Upon the adjacent ends of the sections of the grate-bar are formed hooks to engage with a supporting double cross-bar to keep the said sections in place upon the said cross-bar. In the lower sides of the beveled outer ends of the end sections are formed recesses to allow air to circulate beneath the said ends, as will be hereinafter fully described, and then claimed.

The upper part of the grate-bar is formed of a number of plates, A, which are cast upon lugs B, cast upon the rib or web C of the said grate-bar.

The plates A are cast with narrow spaces D between their adjacent end edges and with a projection, E, upon the end of one plate to correspond with a similar-shaped recess, F,

in the end of the next plate. The plates A have numerous holes G formed through them, and have grooves H formed in their upper surfaces, connecting the upper ends of the holes G.

Each grate-bar is formed in two or more sections, the outer ends I, of the outer sections resting upon the grate-frame, (which frame is not shown in the drawings, as there is nothing new in its construction or use.) The upper sides of the outer ends, I, are beveled upon the upper side, as shown in Fig. 1, so that as the grate-bar expands with heat the said ends will push themselves beneath any ashes or cinders that may be upon the grate-frame, and will thus always have a firm bearing. In the lower sides of the ends I are formed recesses J, to allow air to circulate beneath the said ends.

At the adjacent ends of the grate-bar sections the projections E and recesses F are elongated, as shown in Fig. 1, and upon the lower sides of the said ends are formed hooks K, to engage with the rounded upper edges of the two parts of the supporting-girders or cross-bars L that support the said adjacent ends of the said sections. The double cross-bars L are cast with solid connecting-bars, as shown in Figs. 1 and 2.

With this construction air can circulate freely between the ribs C and plates A, through the perforations of the said plates, and along the grooves in the upper surfaces of the said plates, so that the grate-bars will be kept from warping, twisting, and breaking as they are heated and cooled, and at the same time air will have free access to all parts of the fire, and will thus cause a more thorough combustion. This tapering or conical formation of the perforations is old, and I do not claim it as my invention.

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

1. A grate-bar made substantially as herein shown and described, with perforated and grooved top plates having narrow spaces between their adjacent ends, and cast upon lugs cast upon the supporting-ribs, whereby the air can circulate freely through and around the said top plates, as set forth.

2. In a grate-bar, the top plates, A, cast

solid with the lugs B, cast upon the ribs C, and having the adjacent ends of the said top plates provided with a projection, E, on one end and a corresponding recess, F, in the other end, substantially as herein shown and described.

3. A grate-bar consisting of the rib, the lugs cast upon and projected above the said rib, whereby air can freely circulate between and around them, and the top plates cast upon

the said lugs, the meeting ends of the adjacent plates being separated, whereby such plates may expand and contract without warping or damaging the rib, as and for the purposes specified.

JOSEPH B. MILLER.

Witnesses:

LEONARD ROLL,
HERBERT BRADER.