

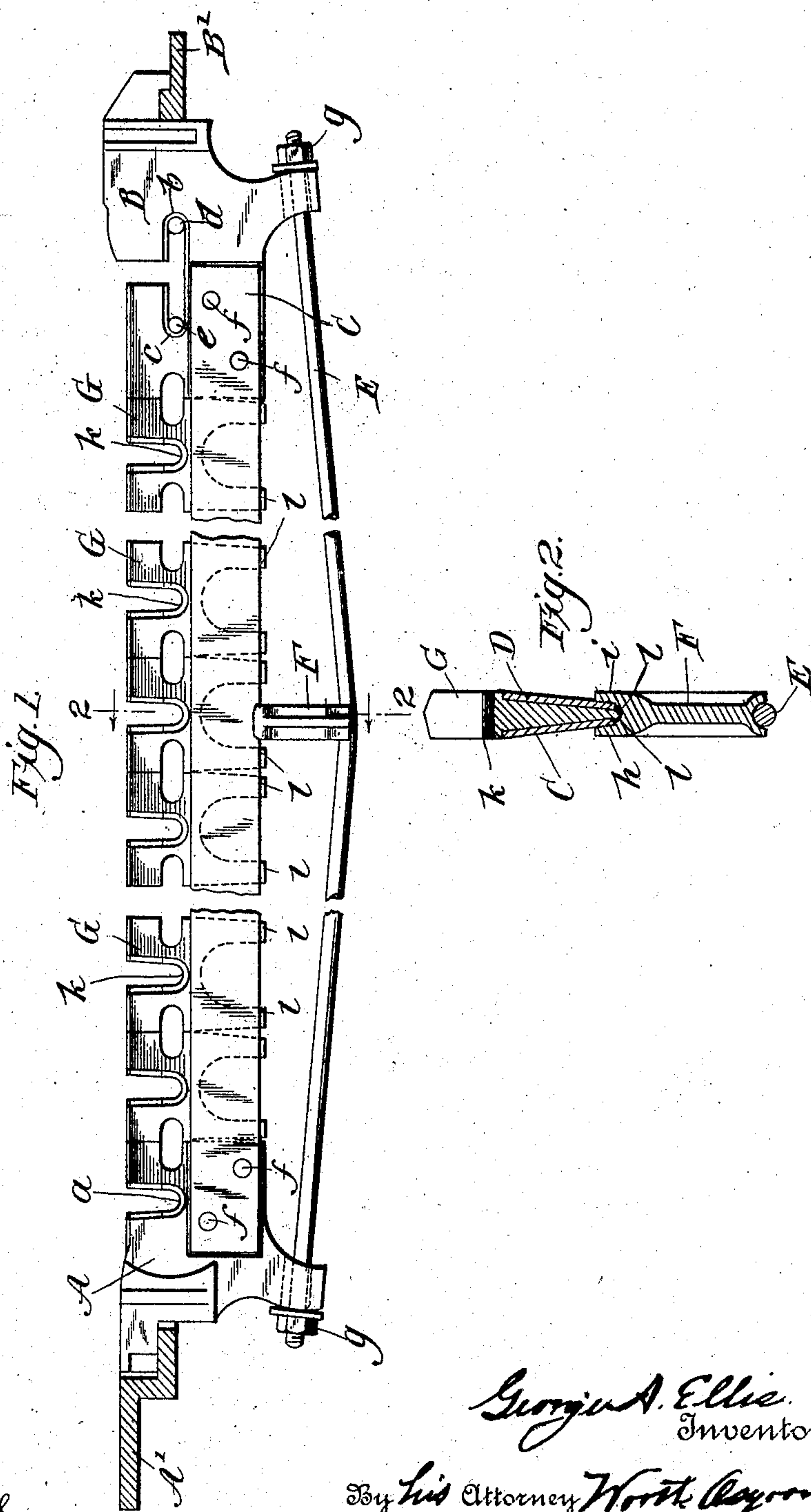
No. 806,123.

PATENTED DEC. 5, 1905.

G. A. ELLIS.

JOURNAL BEARING BAR FOR ROCKING BAR GRATES.

APPLICATION FILED NOV. 11, 1904.



Witnesses:  
L. H. Grote  
Geo. T. Marshall

George A. Ellis.  
Inventor.  
By His Attorney Worth Osgood



# UNITED STATES PATENT OFFICE.

GEORGE A. ELLIS, OF MOUNT VERNON, NEW YORK.

## JOURNAL-BEARING BAR FOR ROCKING-BAR GRATES.

No. 806,123.

Specification of Letters Patent.

Patented Dec. 5, 1905.

Application filed November 11, 1904. Serial No. 232,282.

*To all whom it may concern:*

Be it known that I, GEORGE A. ELLIS, a citizen of the United States, and a resident of Mount Vernon, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Journal-Bearing Bars for Rocking-Bar Grates, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact specification.

My invention has relation to the means employed for mounting and holding or sustaining the journals of grate-bars.

The principal object of my invention is to provide or produce a simple, cheap, and efficient bar for sustaining the journals of grate-bars which is readily and easily applicable for use in connection with any size of grate-surface or with any desired number or size of grate-bars, necessitating the use of only a very limited number of small and comparatively inexpensive patterns, enabling the journals to be located at any desirable points and presenting divided portions to the action of the fire.

Other objects of my invention are to adapt the sustaining-bar for use in connection with grates of various forms, to facilitate the removal and adjustment of portions of the grate-surface whenever necessary, to permit the use of grate-bars of varying widths, and generally to simplify and improve and cheapen the cost of the construction of the support for the journals and make it more desirable and easier to make or mount in place or to repair when necessary.

To accomplish all the foregoing objects and to secure other and further advantages in the matters of construction, operation, application, and use, my improvements involve certain new and useful arrangements or combinations of parts and peculiar features of construction, as will be herein first fully described and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side view of a bar for sustaining the journals of grates constructed and arranged in accordance with my invention and involving my improvements and illustrating one manner in which the improvements may be applied, portions being broken out on either side of the central line to indicate that the bar may be of any desired length. Fig. 2 is a cross-sectional view on a plane through line 2 2 of

Fig. 1 looking in the direction of the arrows, but on a larger scale than Fig. 1.

In both the figures like letters of reference wherever they occur indicate corresponding parts.

For purposes of illustration I have selected that form of sustaining-bar best fitted for use in connection with what are known as "cutting-off and pocketing" grate-bars; but it should be understood that my improvements are applicable in connection with any forms of grate-bars, the mere outline of the parts being changed to correspond with the requirements of any particular case. With the cutting-off and pocketing grate-bars a slightly different arrangement is made at the forward and rear end of the grate-surface, necessitating a difference in the construction of the two ends of the sustaining-bar.

A is a casting suitable for the forward end of a bar calculated to sustain pocketing and cutting-off grate-bars, and B is a slightly different form of casting for the rear end of such bar. When the bar is in place for use, the front end is sustained on any rigid portion of the furnace structure, as at A', and the rear end is sustained on another suitable portion, as at B'. The front casting A is provided with a single recess, as at *a*, which constitutes a bearing for the journal on the end of the front grate-bar. The casting B has two bearings, as at *b* and *c*, which constitute bearings for the journals of the rear pair of grate-bars, (indicated at *d* and *e*.) The journals *d* and *e* after being located in place are blocked in their proper positions, so that they cannot move in the direction of the length of the bar, and this by any convenient and approved means.

The two castings A and B, of whatever form they may be and for whatever style of grate the bar may be intended, are united by longitudinal wrought-metal bars, as C and D, one on each side of the castings, and these two wrought-metal bars are secured upon the castings by suitable rivets, as at *f f*. The two bars C and D are made of merchantable metal, and they are therefore easily cut to the required length, so that together with the two end castings they will make up a bar of the required length for any furnace structure or any length of grate-surface required, so that to vary the length of the sustaining-bar it is only necessary to vary the length of the wrought-metal bars. These bars are prefer-



ably inclined toward each other from top to bottom, as indicated in Fig. 2, and they are preferably seated in depressed portions of the castings; but these two features are not essential to the purposes of my invention, and the two wrought-metal bars might be parallel with each other and might be otherwise fitted upon the end castings.

The sustaining-bar is to be trussed, especially if it be of length sufficient to require trussing, for which purpose I supply a substantial tie-rod, as at E, and this is preferably made to pass through sockets provided for it in the two end castings and is preferably provided with means at each end for tightening it, as the nuts *g g*. The compression member or strut of the truss is represented at F, and this may well be of cast metal. The compression member or strut F rests upon the tie-rod E, and its upper end is fashioned to embrace the two bars C and D at their lower margins, as indicated at *h i*.

G G, &c., are a number of separate bearing-blocks, each recessed and containing the bearing for the grate-bar journal, as at *k k*, &c. The upper portions of these bearing-blocks when in place rest upon the upper edges of the two wrought-metal bars C D, and their lower portions project between these two bars and extend below their lower margins, as at *l l*, where they are slightly enlarged, so as to bear upon the lower margins of the two bars when the blocks are finally forced into position. The number of these separate bearing-blocks to be employed depends, of course, upon the number of grate-bars in the proposed surface, and the blocks should be located and spaced as may be required to accommodate the various grate-bars. They may be slightly separated one from the other in their seating and maintained in place by suitable keys between them, and the castings may be slightly ground or broken away to bring the blocks closer together than they would otherwise come, if necessary. The bearing-blocks are preferably all alike and all cast from the same pattern, so that for making up the improved composite journal-bar it is only necessary to carry in stock patterns for the end castings and patterns for the cast bearing-blocks, three in number.

The separate bearing-blocks are forced down between the two bars C and D before the compression member F is located, when the wrought-metal plates will easily spring sufficiently to allow the bearing-blocks to be inserted. After they are located and adjusted to proper position the springing of the two bars C and D is prevented by the application of the strut or compression member, and the lower slightly-enlarged portions *l l* prevent the blocks from accidentally rising in their seats.

To remove any one of the blocks without disturbing the others, as may sometimes be

required for repairs, the lower portions *l l* are easily broken off or chipped away, when the block may be withdrawn and replaced by a new one, which is driven into place.

The two side bars C and D prevent movement of the bearing-blocks in the direction of the length of the grate-bars, thereby affording immovable bearings in this direction, and the bearing-blocks being made to occupy the space between the end castings they are prevented from moving in the direction of the length of the sustaining-bar, so that the improved bar is amply rigid in all directions and answers all the purposes of the cast-metal sustaining-bar. The weight which is to be supported by the bar is borne by the truss, which is made amply strong for the purpose.

The example of composite bar shown in the drawings is intended for use in connection with rectangular grates, and it is therefore made straight. For circular and other curved grate-beds the side bars should be correspondingly bent, and these bent or curved bars would require correspondingly-curved bearing-blocks; but this would not alter the general character of the invention.

To lighten the bearing-blocks and to save metal, their lower portions are recessed, substantially as indicated in Fig. 1, although this is not always necessary, and the lower portions may be cast solid throughout.

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

1. In a journal-bearing bar for grates, the combination with the two end castings or sections, tie-rod and strut or compression member, of the wrought-metal side bars secured to said castings, and the separate bearing-blocks, said side bars being adapted to sustain the separate bearing-blocks between them, substantially as and for the purposes set forth.

2. In a journal-bearing bar for grates, the two end castings or sections, the two wrought-metal side bars secured to the end sections, a tie-rod connecting the end sections, and a strut or compression member located between the tie-rod and the wrought-metal side bars, substantially as and for the purposes set forth.

3. In a journal-bearing bar for grates, the combination with the two side bars, the end sections, and a tie-rod and strut, of the separate bearing-blocks mounted between said side bars and sustained thereon, the blocks projecting below the bars and being enlarged at their lower portions to bear against the lower margins of the side bars, substantially as and for the purposes set forth.

4. The combination with the side bars and end sections, of the tie-rod secured at its ends, and the strut or compression member, said strut bearing upon the tie-rod and embracing the lower margins of the side bars, substantially as and for the purposes set forth.

5. The herein-described bar for supporting



the journals of rocking grate-bars, the same being composed of wrought-metal side bars, end sections connected with said side bars, a tie-rod and strut or compression member, and  
5 separate bearing-blocks fitted on the side bars, substantially as shown and described.

6. In a journal-bearing bar for grates, the combination with the end sections, tie-rod, strut and side bars inclined toward each other,  
10 of separate bearing-blocks mounted on the

side bars and correspondingly inclined at their lower parts to fit between said inclined bars, substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two sub- 15  
scribing witnesses.

GEORGE A. ELLIS.

Witnesses:

C. SEDGWICK,  
WORTH OSGOOD.