J. H. DIETZ.

GRATE BAR.

APPLICATION FILED APR. 18, 1914.

1,111,059.

Patented Sept. 22, 1914.

2 SHEETS—SHEET 1.

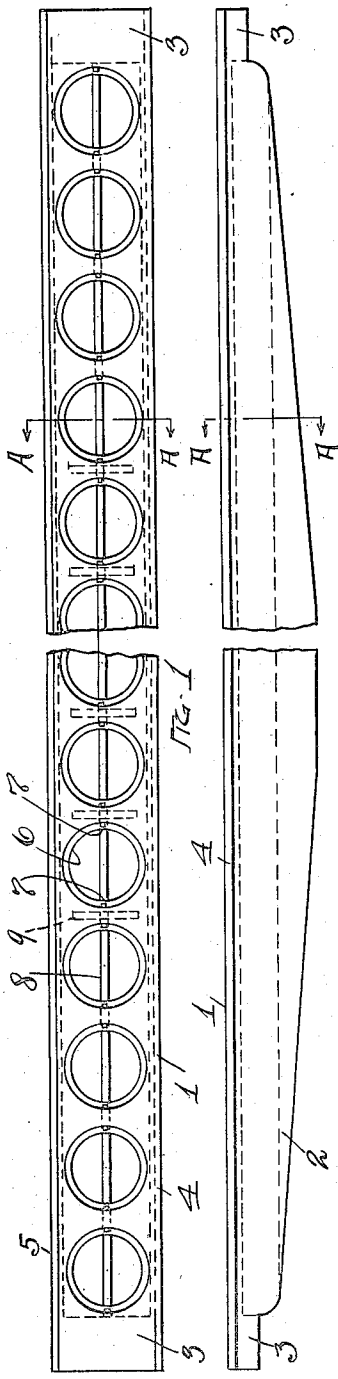


FIG. 2

FIG. 1

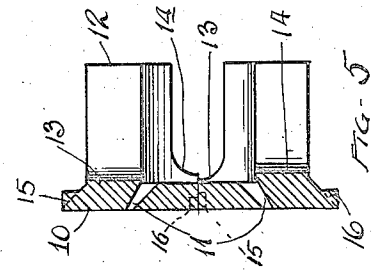


FIG. 5

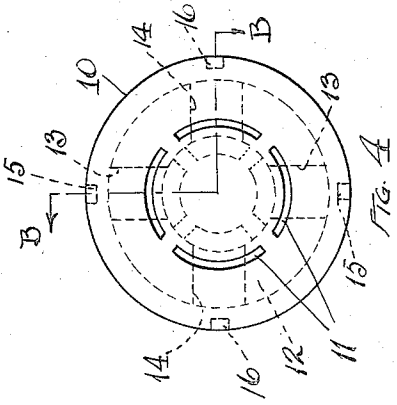


FIG. 4

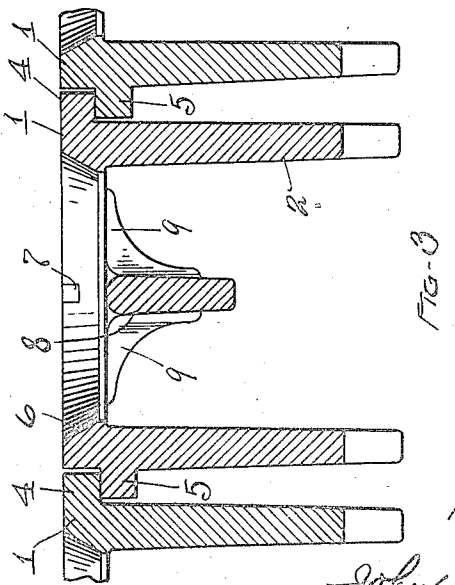


FIG. 3

WITNESSES—

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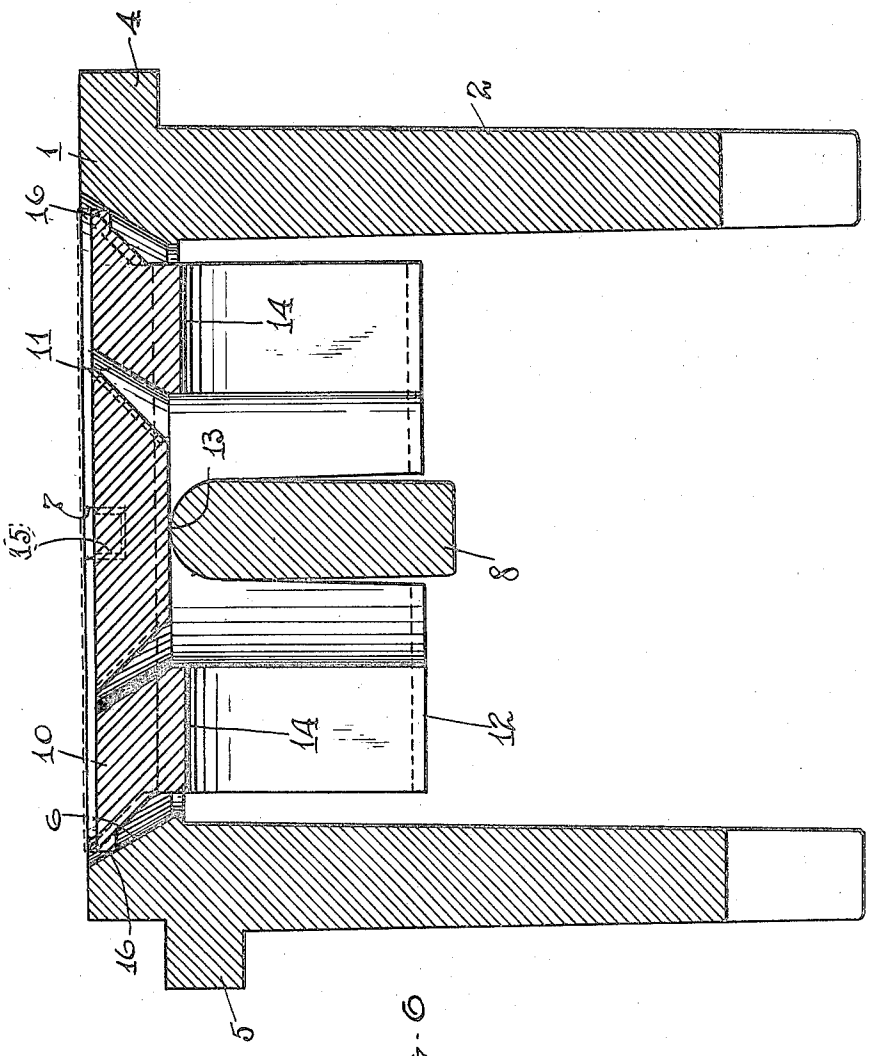


FIG. 6

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UNITED STATES PATENT OFFICE.

JOHN H. DIETZ, OF CLEVELAND, OHIO.

GRATE-BAR.

1,111,059. Specification of Letters Patent. Patented Sept. 22, 1914.

Application filed April 18, 1914. Serial No. 832,771.

To all whom it may concern:

Be it known that I, JOHN H. DIETZ, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Grate-Bars, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention relates to grate bars.

Among its objects are the provision of a bar, several of which may be so assembled that the joints between the bars will be substantially air-tight and yet allow for expansion and contraction; and the provision of effective yet simple operative means for controlling the flow of air through the grate.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—Figure 1 is a broken top plan of the grate bar; Fig. 2 is a broken side elevation thereof; Fig. 3 is a vertical section of the bar on the line A—A in Figs. 1 and 2, with adjacent bars shown in broken section; Fig. 4 is a top plan of a control block; Fig. 5 is a section on the line B—B in Fig. 4, and Fig. 6 is a section of a bar on the plane of Fig. 3, with a block shown in alternative positions in full and dotted lines.

The grate bar comprises a top plate 1 and side members 2, the top having projections 3 at its ends by which the bar is mounted. At one side of the bar is a flange 4 which extends along the length of the bar and on the opposite side is a similarly extending flange 5 whose upper surface lies in approximately the same plane as the under surface of the flange 4.

The bar is provided in its top with a plurality of openings 6 which are preferably circular, and the wall of which is beveled upwardly. A rib 8, stayed at intervals by brackets 9, extends longitudinally at the center of the bar just below the openings 6, and the wall of each opening is formed with two recesses 7 opposite each other on the diameter along which the rib 8 extends.

In assembling any desired number of bars to form a grate, the upper flange 4 of each bar overlies the lower flange 5 of the adjacent bar, and the under surface of the flange 4 is in contact with the upper surface of the flange 5. The adjacent bars are, however, set a small distance from each other so that a space normally exists between the lateral surface of the flange 4 and the opposed side of the adjacent bar, and between the lateral surface of the flange 5 and the opposed side of the adjacent bar.

The peculiar construction of grate bar provided by the present invention permits a number of grate bars to be assembled into a grate, so that the joints between them are air-tight because the meeting surfaces of the flanges are in intimate contact; at the same time expansion and contraction of the bars is freely permitted because of the provision of the expansion space between the sides of the flanges and the adjacent bars.

Each of the openings 6 is designed to be controlled by a block 10. Each block 10, which is preferably circular, is formed with a beveled edge, so that when the block is seated in the opening 6 the peripheral passage between the block and the wall of the opening may be varied by varying the vertical position of the block. The block also is provided with any desired number of supplementary air passages 11. On its under side the block is formed with an annular extension 12. The extension 12 is formed with any desired number of slots whose top walls are at different vertical positions, and whose axes are angularly disposed relative to each other. As illustrated the circular block 10 is formed on one diameter with a slot 13 and on a diameter at right angles to that of the slot 13 with a slot 14, the top wall of which is below the level of the top wall of the slot 13. At its periphery the block is formed with two opposite lugs 15 on the diameter of the slot 13, and with two opposite lugs 16 on the diameter of the slot 14; the bottom surfaces of the lugs 15 lie in a plane a distance below the plane of the bottom surfaces of the lugs 16 corresponding to the distance from the top wall of the slot 13 to the top wall of the slot 14.

One of the blocks 10 is seated in each of

the openings 6 and is supported by the top wall of either the slot 13 or the slot 14 resting on the rib 8. If the block be supported by engagement of the slot 13 with the rib 8 the lugs 16, which are opposite each other on a diameter at a right angle to the rib, contact with the wall of the opening 6 and prevent the block from tipping. In this position of the block the lugs 15 are not functioning, and in order to prevent their striking the wall of the opening the recesses 7 are provided to receive them. If the block be supported in higher position by engagement of the slot 14 with the rib 8, the lugs 15 contact with the wall of the opening and prevent the block from tipping; the lugs 16 have less vertical extent than the lugs 15 and, in the raised position of the block, they lie above the wall of the opening.

The invention therefore provides an effective, and at the same time very simply operable device for controlling the flow of air upwardly through the grate to the fuel. If a block be supported by engagement of the slot 13 with the rib, with the lugs 16 contacting with the wall of the opening, the peripheral passage around the block will be of considerably less area than if the block be supported by engagement of the slot 14 with the rib, with the lugs 15 contacting with the wall of the opening. It is only necessary to lift a block with any suitable device, turn it, and then drop it back into place in its opening, in order to control the amount of air flowing through the grate. It is obvious that the block may be so formed as to provide for supporting it in its opening in more than two vertical positions.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. A grate bar provided in its top with an opening; a support adjacent the opening; and a block designed to control the opening, the block being provided at different vertical and diametrical positions on its under side with rests alternatively engaging the support.

2. A grate bar provided in its top with an opening; a bar extending diametrically across, but below, the opening; and a block designed to control the opening, the block being provided at different vertical and diametrical positions on its under side with downwardly opening slots alternatively engaging the bar.

3. A grate bar provided in its top with an opening having a beveled wall; a bar extending diametrically across, but below, the opening, the opening having two recesses in its wall adjacent the respective ends of the bar; and a block conforming in contour with the opening and having a beveled edge, the block being provided at different vertical and diametrical positions on its under side with slots alternatively engaging the bar, and being provided on its periphery with sets of diametrically opposite lugs adapted alternatively to contact with the wall of the opening, the sets of lugs being formed at different vertical positions corresponding with the slots, and the lower set lying in the recesses when the other lugs are in contacting position.

4. A grate, comprising a plurality of grate bars respectively provided at each side with a longitudinally extending flange and the under surface of one flange lying approximately in a plane with the upper surface of the other flange, the under surface of the higher flange of each bar overlying and contacting with the upper surface of the lower flange of the adjacent bar, each bar having a plurality of openings in its top; a support in each bar extending adjacent to the several openings; and a plurality of blocks designed to control the respective openings, each block being provided at different vertical and diametrical positions on its under side with slots alternatively engaging the adjacent support.

Signed by me, this 17th day of April, 1914.

JOHN H. DIETZ.

Attested by—

ROBERT M. SEE,

H. M. KATHE.