

No. 751,127.

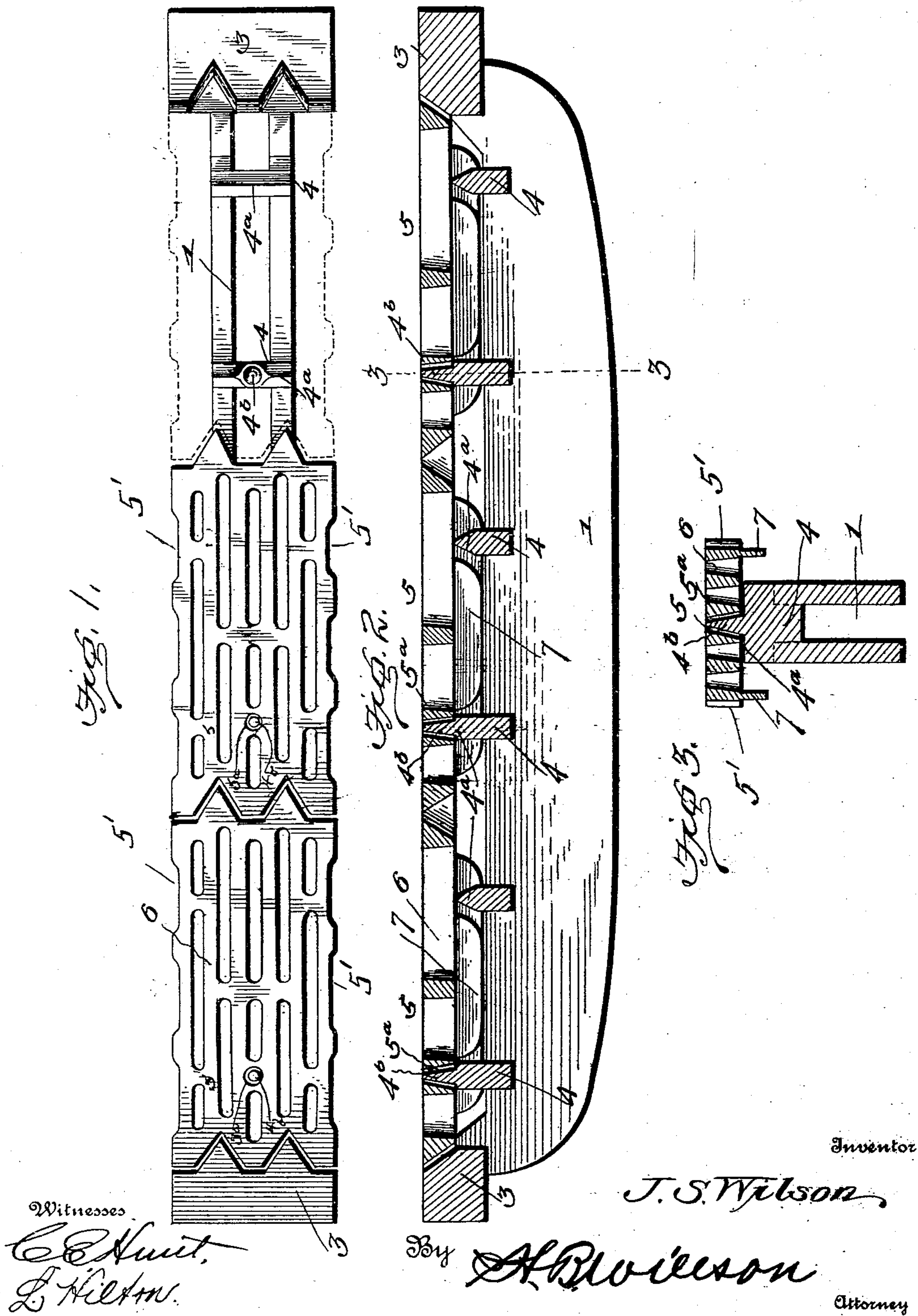
PATENTED FEB. 2, 1904.

J. S. WILSON.

CULM BAR.

APPLICATION FILED FEB. 5, 1903.

NO MODEL.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## CULM-BAR.

SPECIFICATION forming part of Letters Patent No. 751,127, dated February 2, 1904.

Application filed February 5, 1903. Serial No. 142,059. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES S. WILSON, a citizen of the United States, residing at Bloomsburg, in the county of Columbia and State of Pennsylvania, have invented certain new and useful Improvements in Culm-Bars; and I do 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.

This invention relates to grate-bars, and particularly to bars for burning culm and the like, and has for its object to improve the construction shown in Patents No. 325,837 of September 8, 1885, and No. 343,370 of June 8, 1886, granted to S. M. Hess, in which certain features of construction have been found to be objectionable in practice. In the form of bar herein shown and described such objectionable features have been eliminated and a modified and improved construction substituted which from practical use and thorough trial has been found to give entire satisfaction.

The invention consists in a culm-bar comprising certain improved features of construction, which will be hereinafter fully described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan view of the improved bar, one of the grate-sections appearing in dotted outline for convenience in illustrating the underlying portion of the bar. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a transverse section on line 3 3 of Fig. 2.

In the drawings, 1 denotes two bearing-bars arranged parallel with each other and connected together or formed integral at each end with an end piece 3 and which are also connected at intervals along their length by a series of cross-bars 4.

5 denotes the grate-sections, of which there may be any desired number arranged in line and supported upon bars 1. These sections are interchangeable and each comprises a plate, preferably oblong in shape, having formed therein a series of longitudinally-arranged parallel slots or air-spaces 6. The side edges of these plates 5 are formed with re-

cesses or depressions 5', whereby when the plates or sections are placed in parallel longitudinal rows air-spaces will be formed between the rows.

7 denotes longitudinally-arranged strengthening-ribs disposed on the lower side of each grate-section between the air-spaces 6.

The grate-sections 5 are further formed with approximately W-shaped ends, which are adapted to interlock with each other and to engage a similarly-shaped formation on the contiguous faces of the end pieces 3 of the bars 1, the said contiguous faces of the end pieces 3 and ends of the grate-sections 5 being beveled or inclined outwardly and upwardly toward the ends of the bars 1, so that should the expansion of said grate-sections be greater than the space allowed for that purpose the sections will ride up said inclined faces of the end pieces and prevent breaking of any of the parts, as has been found to be the case when square faces and right-angularly-shaped corners were used. The W shape given to the meeting ends of the grate-sections and end pieces 3 provides increased air-space between them and renders the grate-sections interchangeable and more perfectly prevents side-wise body play and displacement thereof.

The cross-bars 4, connecting the bars 1, extend above said bars 1 to form seats 4<sup>a</sup>, upon which the grate-sections 5 are adapted to rest, each alternate one of the seats 4<sup>a</sup> being provided with an upwardly-projecting pin 4<sup>b</sup>, which is adapted to loosely engage a hole or socket 5<sup>a</sup>, formed in the section 5, the size of said hole or socket being such relatively to the pin as to permit the grate-sections to have sufficient body movement longitudinally along the bars to ride up upon the beveled or inclined faces of the end pieces 3 when abnormal expansion of the grate-sections occurs, as heretofore described. The upper sides of the seats 4<sup>a</sup> are tapered to an edge to prevent ashes lodging on their upper surfaces and to permit air to circulate more freely through the grate-sections.

It will be seen that the pins 4<sup>b</sup> and sockets 5<sup>a</sup> are so disposed that each grate-section is engaged by a pin near one end only, the ad-



vantage of which is that a freer expansion of each grate-section in all directions is permitted and an increase in the air-space of the section secured and the air-space between the sections throughout the entire length of the bearing-bar made uniform.

In assembling the grate the sections 5 are placed upon the bars with their W-shaped ends engaging, as hereinbefore described, and the sections resting upon the seats 4<sup>a</sup>, and the pins 4<sup>b</sup> projecting into the openings or sockets 5<sup>a</sup>, so that the sections may expand freely and have sufficient body movement for abnormal expansion, but will be prevented from moving out of interlocking engagement and becoming displaced. The pins 4<sup>b</sup>, by engaging the openings or sockets 5<sup>a</sup>, serve to hold the grate-sections 5 in place, as in passing a scraper over a section should a clinker be caught in said sections the scraper would be apt to catch on the clinker and pull the section out unless some provision were made to hold the section down. Therefore it will be seen that should such a contingency arise the section would be pulled or pushed by the scraper only a short distance before the wall of the socket 5<sup>a</sup> would engage the pin 4<sup>b</sup>, which pin would thereupon serve as a catch or stop to prevent the section from being pulled up or otherwise becoming displaced.

The points of advantage of the improved grate herein shown and described may be enumerated as follows: The grate-sections are interchangeable. The W-shaped ends give greater air-space and prevent catching of the scraper in the joints. The beveled ends of the sections and the beveled formations in the end pieces of the bearing-bars allow unlimited expansion and prevent breaking of the parts, which is an important feature of this construction. The seats 4<sup>a</sup> of the cross-pieces 4 support the grate-sections at a sufficient elevation above the bars 1 to provide for the freer circulation of air through the spaces 6, and the tapered formation of said seats prevents any lodgment of ashes thereon which would interfere with the free assemblage of the grate-sections. By providing the bars 4 with the pins 4<sup>b</sup> and the grate-sections 5 with the openings 5<sup>a</sup> to receive the pins not only are the sections held from displacement, but at the same time are permitted to freely expand, and by doing away with lugs or projections from the under side of the grate-sections the spaces in the sections ordinarily utilized thereby may be slotted to increase the area of the air-passages 6. The superiority of my improved construction

of grate-bars will in view of these stated advantages be readily apparent.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. The combination of a grate-bar, a grate-section having an opening extending there-through, and a projection on the bar entering said opening and forming therewith a connection to hold the grate-section against displacement, said opening being of greater diameter than the projection, thereby providing a loose connection and also forming an open air-passageway, substantially as described.

2. In combination, a grate-bar having an upwardly-extending projection, and a removable grate-section on the bar having an opening to receive said projection, the diameter of said opening exceeding that of the projection, whereby a limited longitudinal movement of the grate-section is permitted, substantially as described.

3. In a grate, the combination of a grate-bar, comprising longitudinal bars and cross-bars connecting them together, said cross-bars being extended upwardly and shaped to form tapered seats, said seats having upwardly-projecting pins, and grate-sections adapted to rest upon said seats and having openings to receive said pins.

4. In a grate, the combination of a grate-bar, having upwardly-projecting cross-pieces terminating in seats, said seats being tapered and each alternate seat having a pin projecting upwardly therefrom, and interlocking grate-sections resting upon said seats and each having near one end a socket, the said sockets of the grate-sections receiving said pins, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES S. WILSON.

Witnesses:

ROBT. R. LITTLE,  
R. H. RINGLER.