

No. 667,014.

Patented Jan. 29, 1901.

W. S. HULL.

GRATE BAR.

(Application filed July 10, 1900.)

(No Model.)

Fig. 1.

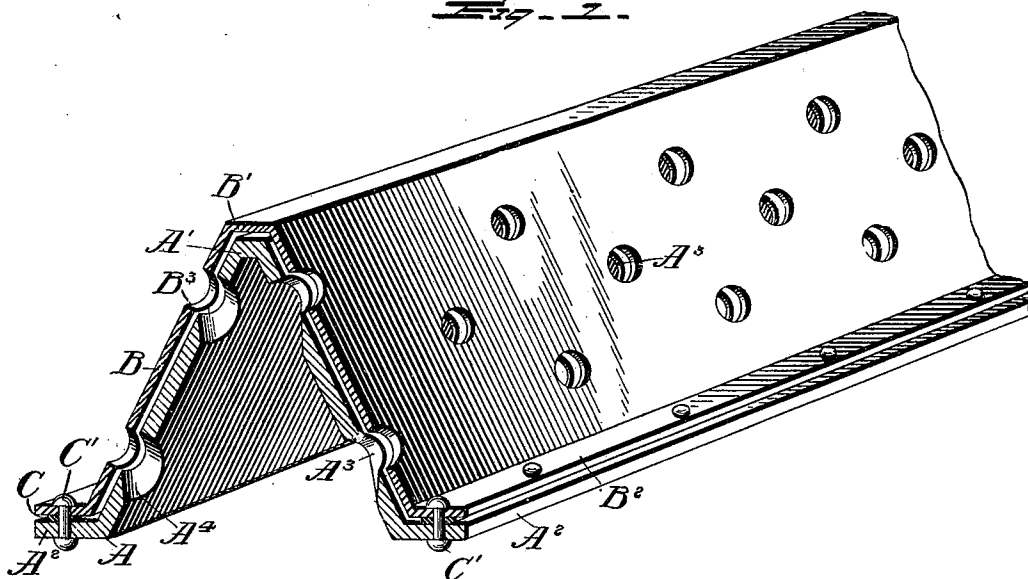
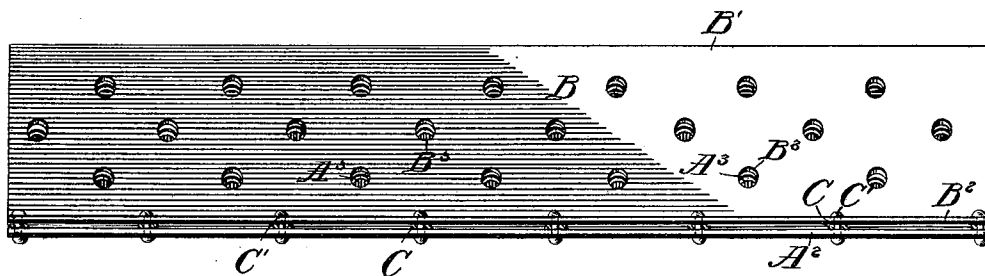


Fig. 2.



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# UNITED STATES PATENT OFFICE.

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## GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 667,014, dated January 29, 1901.

Application filed July 10, 1900. Serial No. 23,115. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM S. HULL, a citizen of the United States, residing at Jackson, in the county of Hinds, State of Mississippi, have invented certain new and useful Improvements in Grate-Bars, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to grate-bars, and particularly to such bars for use in garbage-furnaces or similar furnaces for the incineration of refuse of a more or less moist character.

The invention has for one object to provide a grate-bar which will not warp or bend under the weight of a load or crack from the presence of moisture in the material resting upon the bar. The difficulties heretofore experienced in metal grate-bars for garbage or refuse were that a bar of wrought-iron when heated to a red heat would bend under the load of garbage placed thereon, while a cast-iron bar would frequently crack owing to the presence of cool fluids in the material to be consumed upon the bars. To obviate this difficulty, the bar presented in this invention is a combination of wrought and cast iron or other metals having similar characteristics in the presence of heat and moisture placed together so that the effect of one character or kind of metal is counteracted by the other kind or character associated therewith.

A further object of the invention is to provide a grate-bar upon which the garbage or refuse may be properly aerated, and thus the consumption thereof by the heat more readily effected, owing to the presence of oxygen in the mass to be consumed.

Other objects and advantages of the invention will hereinafter appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective of a portion of a grate-bar, and Fig. 2 is a side elevation of the same.

Like letters of reference indicate like parts in both figures of the drawings.

In the form of the invention illustrated in the present application the base or lower surface A of the bar is formed of cast-iron or any other similar character or kind of metal

which will not bend in the presence of heat necessary for the consumption of garbage or refuse. The bar A has associated therewith a covering or superposed bar B, which is of wrought iron, steel, or other similar metal which will not crack or break when moisture is introduced thereon and the bar heated. These two bars may be associated in any desired manner. For instance, as illustrated, they may be separated by washers C and secured together by rivets or bolts C', which form of assemblage permits the passage of air between the bars and prevents the direct contact of one member or layer thereof upon the other. It is apparent, however, that this laminated construction may be effected by any desired assemblage of the metals.

The form of bar herein shown, and which has been found particularly desirable for the consumption of garbage, is composed of an upwardly-projecting V-shaped portion A' and a horizontally-disposed flange A<sup>2</sup>, while the sides of the bar A are provided with a series of openings A<sup>3</sup>, which are preferably beveled or inclined inwardly, as shown at A<sup>4</sup>, to permit the clearing of the same if filled by any substance resting upon the bars. The bar B, which rests upon the bar A, is provided with a similar V-shaped portion B', conforming in outline to the bar A, and with a horizontal flange B<sup>2</sup>, through which the securing-bolts C' are passed. The bar or member B is also provided with apertures B<sup>3</sup>, corresponding in position with the apertures A<sup>3</sup> in the bar A, thus effecting a means for the introduction of air in the mass of garbage or refuse resting upon the bars and effecting a thorough aeration and complete combustion thereof.

From the foregoing description it will be seen that the mass of moist garbage or refuse which rests upon the wrought iron or steel bar B does not effect this bar by causing a cracking or breakage thereof, while the bar A, of cast metal, prevents the bending or deflection of the bar B by reason of the load placed thereon when the bars have become heated to a sufficient extent necessary for the consumption of the refuse thereon. A grate-bar is thus produced which is not readily affected nor quickly destroyed by the conditions to which it is subjected when consuming moist refuse, while the space between the

bars permits a sufficient passage of air to allow the bars to act under heated conditions in accordance with either individual characteristic. It is also apparent that the V-shaped or inclined surface of the bar prevents the garbage from resting in a compact semiliquid mass which resists the admission of oxygen necessary for combustion and requires the consumption of an unnecessary amount of fuel for the purpose of incinerating the refuse. The present construction is adapted to hold the garbage upon the inclined faces of the bars, and the apertures therein permit the passage of air and the supply of oxygen necessary for a very rapid and complete combustion of the material resting upon the bars.

It will be obvious that changes may be made in the details of construction and configuration of the bar and also in the character of material used without departing from the spirit of the invention as defined by the appended claims.

Having described my invention, what I claim is—

1. A grate-bar comprising a lower V-shaped plate of cast metal provided with a horizontally-disposed base portion, a V-shaped upper plate of wrought metal provided with a horizontally-disposed base portion and adapted to completely cover the upper face of said cast plate, and means for spacing said plates from each other; substantially as specified.

2. A grate-bar having a base-plate or layer

of cast metal and inclined apertured side walls, an upper plate or shell of wrought metal covering the upper face of said base and having inclined apertured side walls with the apertures in alinement with those of the base, means for securing said plates together, and means for spacing said plates apart to leave an intermediate air-space, substantially as specified.

3. A grate-bar having a base-plate or layer of cast metal and inclined apertured side walls having apertures enlarging inwardly, an upper plate or shell of wrought metal covering the upper face of the base and having inclined apertured side walls with the apertures in alinement with those of the base, means for forming an intermediate air-space between said plates, and means for securing the plates together, substantially as specified.

4. A grate-bar composed of a cast-metal base having inclined walls and apertures therein, an apertured wrought-metal shell for said base of similar shape thereto, means for spacing said shell and base from each other, and means for securing said parts together; substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM S. HULL.

Witnesses:

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AMOS R. JOHNSTON.