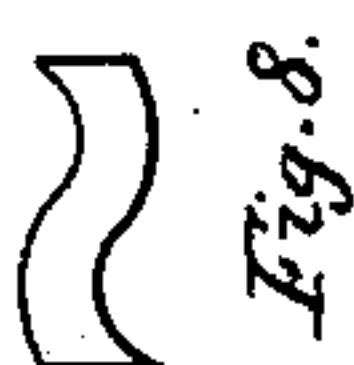
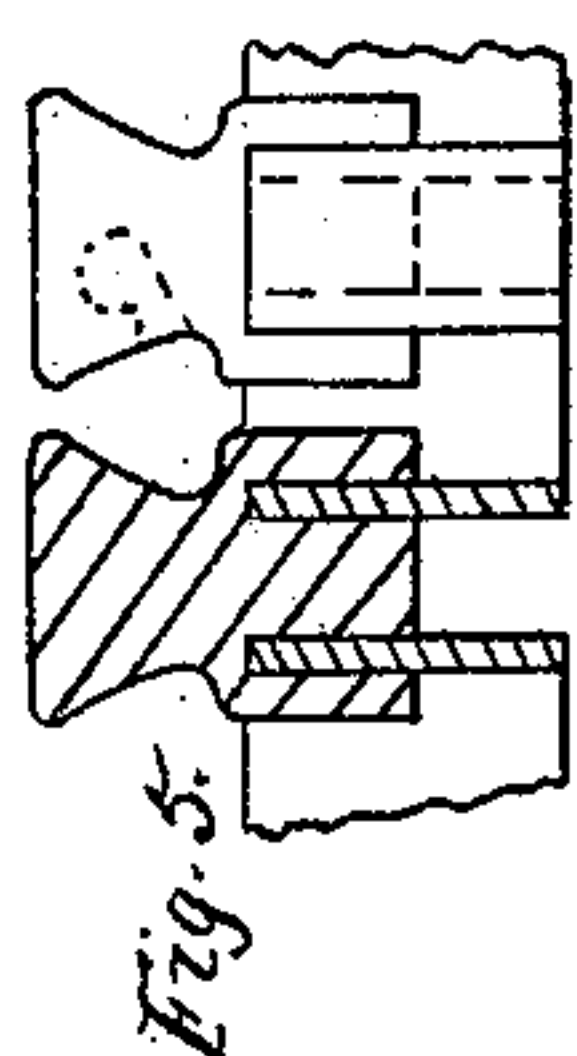
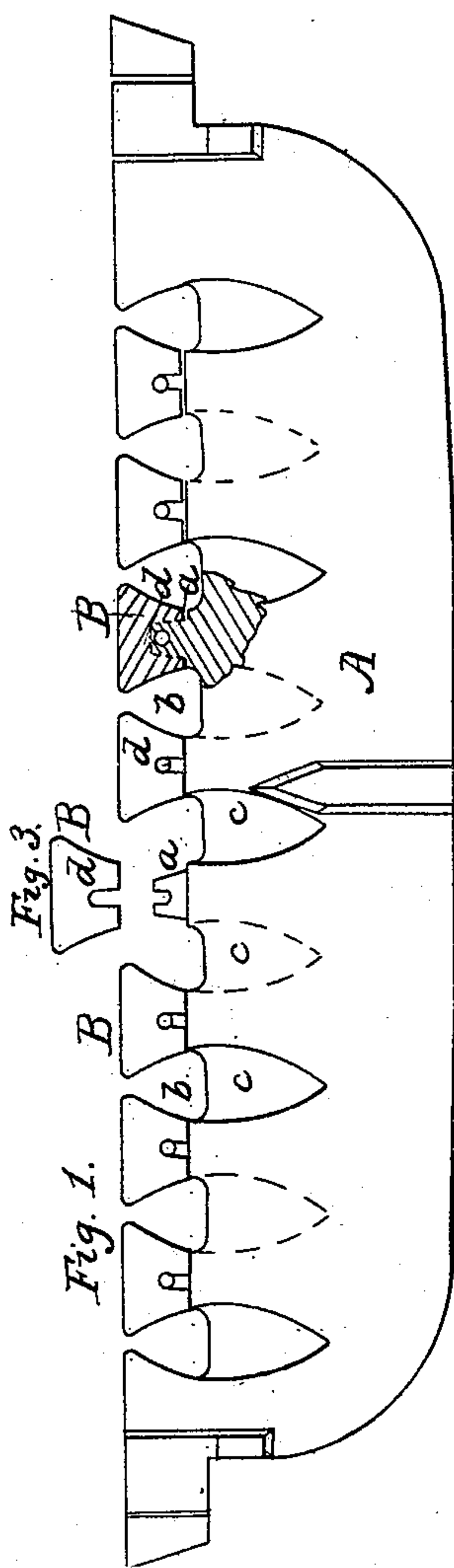
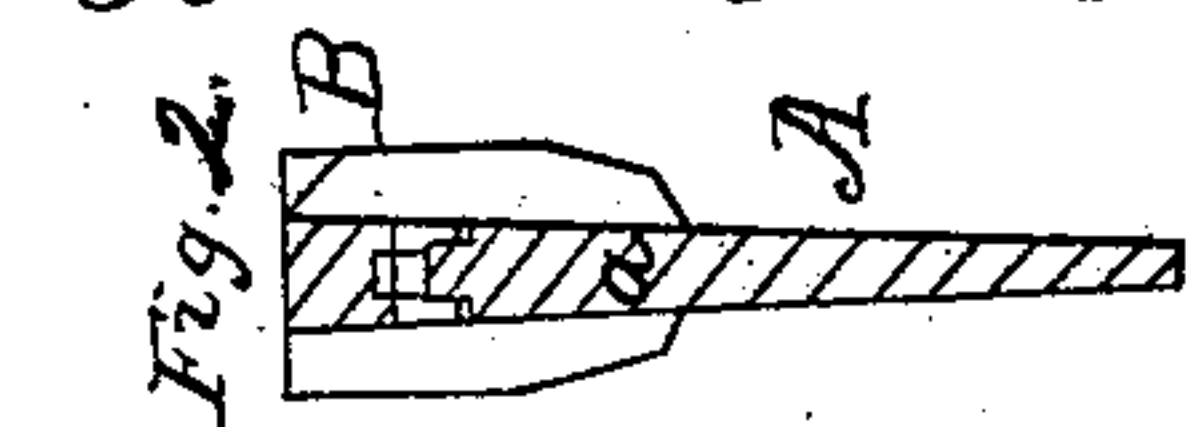


A. C. Fletcher,
Furnace-Grate Bar.
N^o 81,155. Patented Aug. 18, 1868.



Witnesses.

A. H. L. L.
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Inventor

Addison C. Fletcher

UNITED STATES PATENT OFFICE.

ADDISON C. FLETCHER, OF NEW YORK, N. Y.

IMPROVEMENT IN GRATE-BARS.

Specification forming part of Letters Patent No. **81,155**, dated August 18, 1868.

To all whom it may concern:

Be it known that I, ADDISON C. FLETCHER, of the city, county, and State of New York, have invented a new and useful Improvement in Grate-Bars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a partly sectional side view of one form or modification of a grate-bar constructed in accordance with my improvement; Fig. 2, a transverse section of the same, and Figs. 3 and 4 side views of two of the points or fuel-rests to the grate-bar as made of different materials and detached from the bar. Figs. 5 and 6 represent longitudinal vertical and horizontal sections of another modification of the improved grate-bar, and Fig. 7 a side view of one of the points or fuel-rests under such modification detached. Fig. 8 is a plan of another form of detachable point.

Similar letters of reference indicate corresponding parts.

My invention has reference to that description of grate-bars in which the upper edge of the bar is provided with transverse recesses through it, so as to form a series of separated fuel points or rests, that not only admit of a free circulation and supply of air up between the points and among the fuel on the grate, but also furnish a large and efficient escape for dust and ashes from the fire-bed, likewise prevent the overheating of the bar, and provide for its expansion without warping or straining.

My invention consists, first, in constructing said separated fuel-points of a loose or detachable character, and the main portion or body of the bar of a suitable form to hold or receive said points at any desired fixed distance or distances from each other, and whereby convenient provision is made for renewal of the points without removing or renewing the main portion or body of the bar.

The invention also covers a special construction of said detachable points, and of their supports or rests on the main bar, whereby the points are not only made to act as covers or caps to the latter, but also answer, by their form and construction, to establish ducts or

spaces between them of increasing capacity in a downward direction.

Likewise, the invention includes the combination, with the grate-bar or its body portion, of detachable separated fuel points or rests, having an air duct or passage through them.

Referring in the first instance to Figs. 1, 2, 3, and 4 of the accompanying drawing, A represents the body of a grate-bar, which is studded on its upper edge with separated fuel-points B. These points are of a loose or detachable character from the main portion or body of the bar, and may be made of any suitable material. In Figs. 1, 2, and 3, they are represented as made of metal, and in Fig. 4 as constructed of fire-brick. They are capable of various forms or shapes, so long as they retain the character of points, with air ducts or spaces between them, as contradistinguished from a straight or continuous surface. It is preferred, however, to construct them essentially as represented in Figs. 1, 2, 3, and 4, whereby they not only form independent caps to supports *a*, that, projecting from the upper edge of the bar, are received within the points, and serve to hold or retain them in place, and at proper fixed or relative distances from each other, with every facility for detachment of the points when required, but whereby, being made longer at top than below, and preferably with rounded edges or ends to their upper surfaces, said points establish air-spaces *b* between them of an enlarged or enlarging capacity in a downward direction, and presenting contracted but efficient distributing-mouths above, by which construction, also, a proper grate-surface is obtained, with a copious supply of air up between the points, and free escape for dust and ashes. Recesses *c* may be made alternately on or in opposite sides of the bar, for the better supply of air to and escape of refuse from the spaces *b*. It furthermore is preferred to construct said points so that when in their places they will present air ducts or passages *d*, of any suitable shape, through them, for the purpose of keeping the centers or bodies of the detachable points cool. This may be done by forming the points with vertical oblong passages through them, and the supports or

steadying projections *a* with corresponding openings; or it may be accomplished in any other suitable manner.

Figs. 5, 6, and 7 represent different constructions of the points and main body or portion of the bar. In these figures the bar proper is made of a zigzag form in its transverse section, and the lower or base portion of the points slotted, so as to clip or straddle the bends in the sides of the bar, for the purpose of holding the points in place. However carried or secured, the principle of action or leading advantages, as derived from the detachable points, is the same, and where the same are provided with air-ducts through them, such may either be made as described, or by openings in communication with the air-spaces *b*, that give to the points a hook-shaped character, as represented by dotted lines in Fig. 5. In Fig. 8 the detachable fuel-point is shown as of corrugated or serpentine form on its upper surface, to give a more extended side cooling-surface, and to better provide for expansion of it.

By constructing the bar with separated fuel-points of a detachable character, there is great economy and durability, not simply by the admission of air between them and the provision established for their expansion, but by the facility with which they may be removed and replaced by similar points, when broken or destroyed, without removing or renewing

the main portion of the bar, while, by constructing such detachable fuel-points with air ducts or spaces through them at their bodies or centers, and forming them so that they present air-spaces between them of an enlarged or enlarging capacity in a downward direction, the durability and advantages of the detachable point are increased.

What is here claimed, and desired to be secured by Letters Patent, is—

1. A grate-bar constructed or provided with separated fuel-points of a detachable character, and so that the same may be readily fitted to and retained by the main portion or body of the bar at suitable fixed distances apart, leaving air ducts or spaces between them, substantially as specified.

2. In combination with the main portion or body *A* of the bar, the loose or detachable points *B*, when constructed so as to leave air-spaces of an enlarged or enlarging capacity in a downward direction between them, essentially as herein set forth.

3. The combination, with the body portion of the bar, of detachable separated fuel-points, having air ducts or passages through them, substantially as specified.

ADDISON C. FLETCHER.

Witnesses:

A. LE CLERC,
ARTHUR KINNIER.