

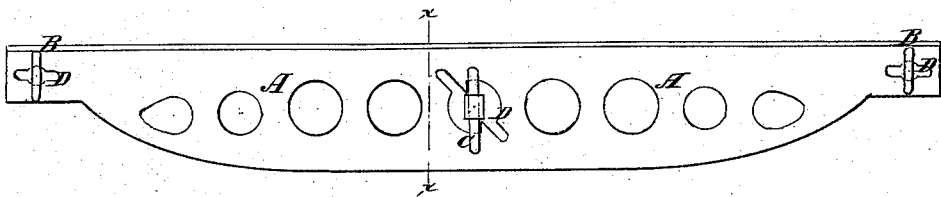
*A. L. Pennock,*

*Furnace Grate.*

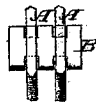
*No. 107,715.*

*Patented, Sept. 27, 1870.*

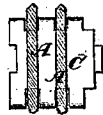
*Fig. I.*



*Fig. II.*



*Fig. III.*



**Witnesses:**

*Auguste Ditonoch*  
*J. S. Marble*

**Inventor:**

*A. L. Pennock*

**PER**

*Munn & Co.*

**Attorneys.**

# United States Patent Office.

ABRAHAM L. PENNOCK, OF UPPER DARBY, PENNSYLVANIA.

Letters Patent No. 107,715, dated September 27, 1870.

## IMPROVEMENT IN FURNACE-GRATES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ABRAHAM L. PENNOCK, of Upper Darby, in the county of Delaware and State of Pennsylvania, have invented a new and useful Improvement in Furnace-Grates; and I do hereby declare that the following is a full, clear and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to a new and useful improvement in grates for furnaces, whereby they are made cheaper, more useful, and more durable than they have heretofore been; and

It consists in locking the bars together by means of locking-pieces running through and at right angles with the bars, the said locking-pieces having notches for holding the bars, by means of which the distance of the bars apart may be varied, so as to adapt the grate to either coarse or fine-coal, as will be hereinafter more fully described.

In the accompanying drawing—

Figure 1 represents a longitudinal side view of the grate, showing the ends of the locking-pieces.

Figure 2 is a cross-section of fig. 1 on the line *x x*

Figure 3 is an end view of fig. 1.

Similar letters of reference indicate corresponding parts.

In this example of my invention two grate-bars only are shown locked together, but as this is all that is necessary to explain the invention, it is presumed to be sufficient.

A represents the grate-bars, which are locked together at each end and in the middle, but I do not confine myself to any particular number of locks, nor to any particular location for them.

B represents the end locking-pieces, and

C the middle locking-piece.

The form of these locking-pieces is seen in figs. 2 and 3. They are simply thin pieces of metal, of a

width not exceeding the width of the grate where they are placed, with notches for receiving the grates, as seen in the drawing.

D represents slots through the grates, which admit the locking-pieces. The central portions of the slots are circular orifices, of a diameter sufficient to receive the portion of the locking-piece between the notches.

In putting in these locking-pieces, they are passed through the slots in the grate-bars, so that the bars correspond with the notches when the pieces are turned either at right angles with the slots, as seen at the ends of the bars, or at a right angle with the bars when the slot is placed diagonally in the bar, as seen in middle of the grate.

There may be more or less notches in the locking-pieces, so that the grate-bars may be placed at a greater or a lesser distance apart, to suit the different sizes of coal.

By the use of these locking-pieces the grate-bars may be made much thinner than they otherwise could be, and be durable. Consequently, the grate is more open, the draught improved, and a better and more perfect combustion of the fuel is produced.

The loose locking-pieces allow the bars to expand and contract without damage, and far less weight of metal is required in the construction of the grate.

The durability and utility of the grate are increased, while the cost of it is materially lessened.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

In combination with the grate-bar, the slots D and the locking-pieces B and C, when the same are constructed and arranged to operate substantially as and for the purposes herein shown and described.

ABRAHAM L. PENNOCK.

Witnesses:

W. C. GRAY,  
J. T. TEMPLE.