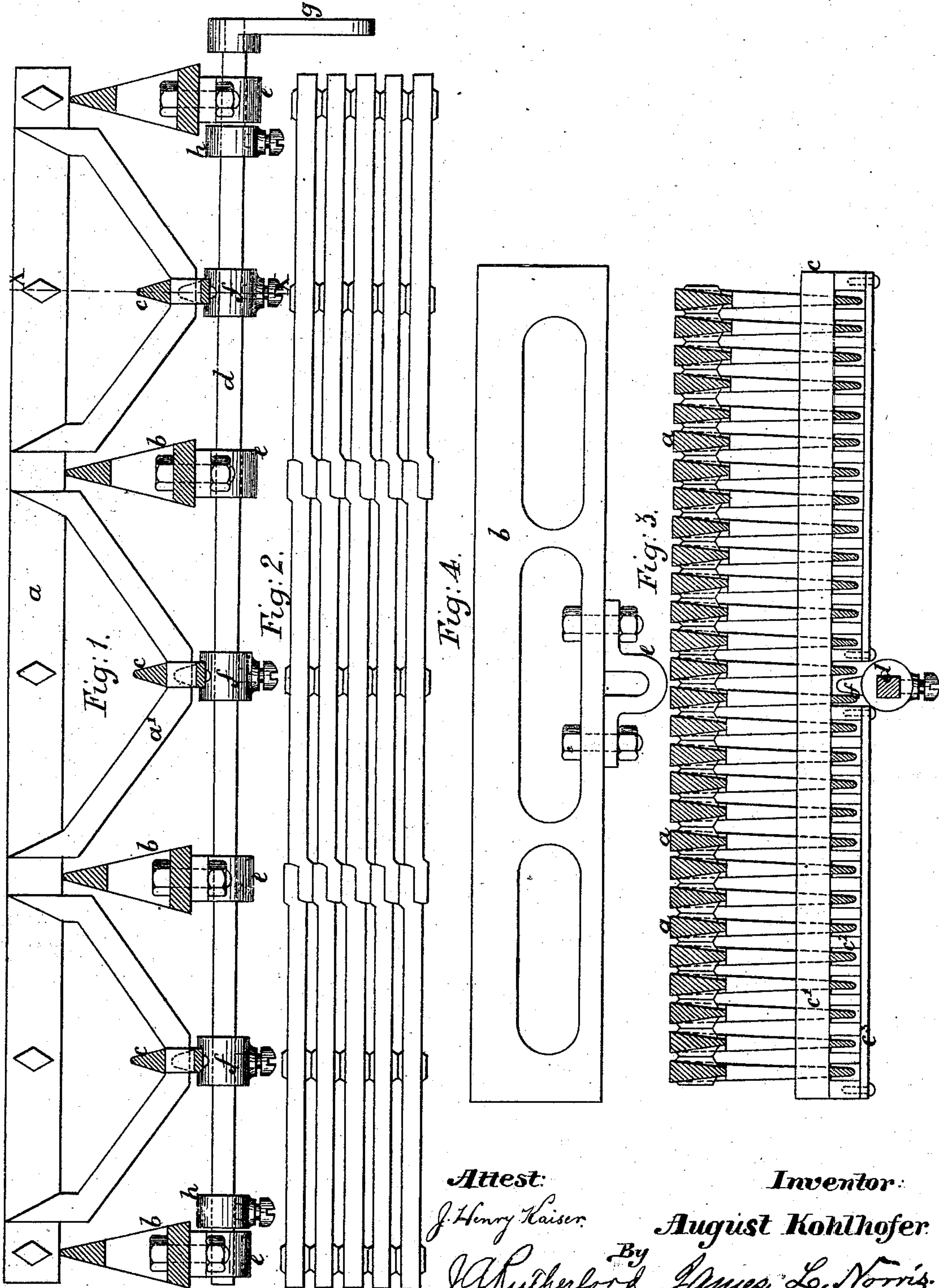


A. KOHLHOFER.  
Furnace-Grate.

**No. 225,146.**

**Patented Mar. 2, 1880.**



**Attest:**

J. Henry Kaiser.

*Inventor:*

*August Kohlhöfer.*

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Atty.

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# UNITED STATES PATENT OFFICE.

AUGUST KOHLHOFER, OF MUNICH, BAVARIA.

## FURNACE-GRATE.

SPECIFICATION forming part of Letters Patent No. 225,146, dated March 2, 1880.

Application filed January 28, 1880. Patented in Germany, February 17, 1878.

*To all whom it may concern:*

Be it known that I, AUGUST KOHLHOFER, of Munich, in the Kingdom of Bavaria, engineer, have invented an Improvement in Furnace-Grates; and I do hereby declare that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvement, by which my invention may be distinguished from others of a similar class, together with such parts as I claim and desire to secure by Letters Patent—that is to say:

According to my invention furnace-grates are constructed of a number of separate furnace-bars, by preference of moderate length, resting with their ends on supports, between which each bar has a V-shaped projection extending downward a considerable distance, by preference in the form of an open loop. At the lowest point each of these projections is embraced loosely by a separate loop on a transverse bar, which consequently connects all the bars in one and the same row loosely together.

Thus, by imparting a reciprocating motion to the transverse bar by any convenient means, all the furnace-bars connected thereto will be rocked separately on their supports, and consequently the clinkers and ashes collecting thereon will be effectually broken up and removed.

On the accompanying drawings, Figure 1 shows a longitudinal section of a furnace-grate constructed according to my invention. Fig. 2 shows a plan. Fig. 3 shows a transverse section on line X X, Fig. 1; and Fig. 4 shows a view of one of the transverse bearers.

The bars *a a* rest with their ends on transverse bearers *b b*, the contiguous ends of two lengths of bars being cranked, as shown, so as to overlap each other, thus enabling the two ends to be supported by the thin upper edge of one and the same bearer.

The V-shaped extension *a'* of each bar, formed, by preference, as an open loop, as shown, is embraced loosely by a loop on a transverse bar, *c*, by means of which bar all the furnace-bars of one row are consequently connected

together and prevented from being displaced in stoking.

The loops of the transverse bars may conveniently be formed by a cast-metal bar, *c'*, having comb-like projections *c<sup>2</sup>*, the spaces between which are closed at bottom by plates *c<sup>3</sup>*, secured by screws, as shown.

Thus it will be seen that by imparting a reciprocating longitudinal motion to the transverse bars a rocking motion will be imparted simultaneously to all the furnace-bars upon their supports.

Such reciprocating motion may be conveniently imparted to the transverse bars by means of a longitudinal shaft, *d*, carried in bearings *e e*, fixed to the transverse bearers *b*, and having tappets *f* secured thereon by set-screws, as shown, which tappets enter between two of the loops on the bar *c*, or between the V-projections of two contiguous bars, so that by imparting to the shaft *d* a rocking motion in its bearings by means of a hand-lever, *g*, outside the furnace, the desired reciprocating motion will be imparted to the transverse bars and furnace-bars.

The shaft *d* is held in position in its bearing by means of loose collars *h*, secured by set-screws.

The transverse bearers *b* being formed with large openings and the V-projections of the grate-bars being also open, it will be seen that the air can pass freely to the under side of and through the grate.

Having thus described the nature of my invention and the best means I know of carrying it out in practice, I hereby claim—

1. A furnace-grate wherein each furnace-bar is supported at its ends upon stationary bars and has a deep extension on its under side, by which it is connected loosely to a loop on a transverse longitudinally-reciprocating bar, that serves both to tie all the bars of one row together and to impart to them separately a rocking motion on their bearings, substantially as and for the purposes herein described.

2. A furnace-bar, *a*, having a loop-shaped extension, *a'*, on its under side, adapted for connection to a transverse bar for imparting a rocking motion thereto, substantially as set forth.

3. The combination of the furnace-bars *a* with V-shaped extension *a'*, looped transverse bar *c*, and longitudinal rocking shaft *d*, with tappets *f*, for imparting a rocking motion to the  
5 furnace-bars, as and for the purposes herein described.

In testimony whereof I have signed my name

to this specification, in the presence of two subscribing witnesses, this 22d day of October, A. D. 1879.

AUGUST KOHLHOFER.

Witnesses:

CHAS. D. ABEL,

H. E. HOPKINS.