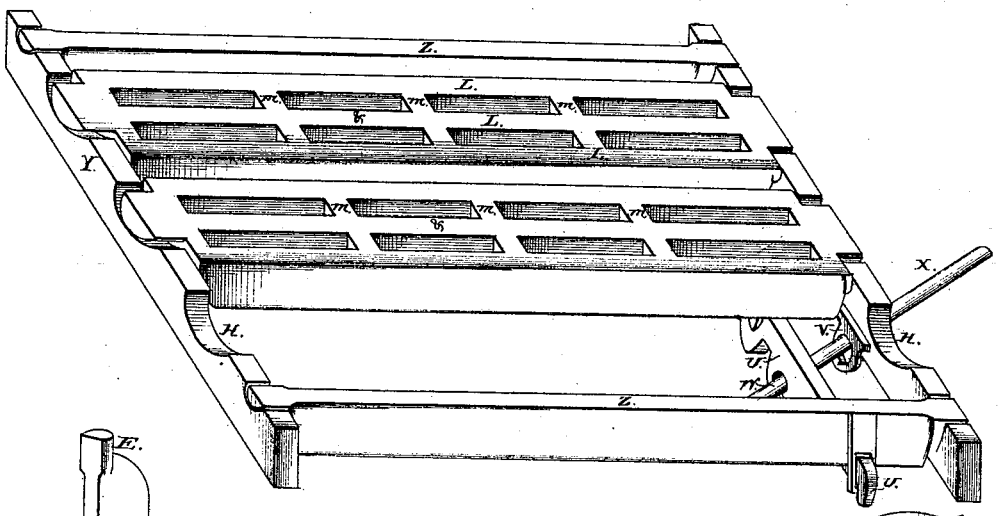
R. C. GRAVES.

FURNACE GRATE.

No. 181,837. Patented Sept. 5, 1876.

Fig. 1.



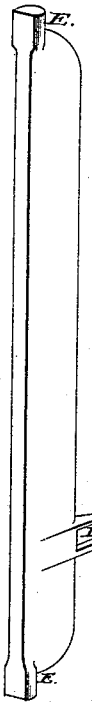


Fig. 2

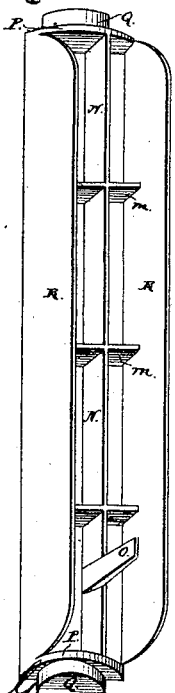
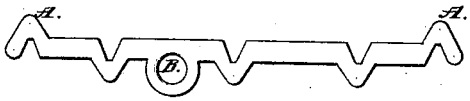


Fig. 3.

Fig. 4.



Attest:

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Inventor:

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UNITED STATES PATENT OFFICE.

ROBERT C. GRAVES, OF CAMBRIDGE, OHIO.

IMPROVEMENT IN FURNACE-GRATES.

Specification forming part of Letters Patent No. **181,837**, dated September 5, 1876; application filed January 6, 1876.

To all whom it may concern:

Be it known that I, ROBERT C. GRAVES, of Cambridge, Guernsey county, Ohio, have invented a new and useful Improvement in Grate-Bars and Grate-Bar Attachments, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

My invention is an improvement upon the invention of Robert C. Graves, for which Letters Patent were granted to him for improvement in furnace grate-bars, numbered 135,799, dated February 11, 1873, and reissue numbered 6,353, dated March 30, 1875, and has relation to grates and grate-bars.

Figure 4 is a transverse reciprocating bar. B is a slot through the bar. The upper side of this bar has a series of V-shaped notches, one for each bar it is to receive. The ends of the bar A A have reversed V-shaped notches on a line with the others, by means of which the transverse bar is suspended beneath a series of bars in a grate or furnace. This transverse bar dispenses with the drilling of the bar and lugs which was required in the former patent.

Letter V, Fig. 1, is the lever-fulcrum, which is a part of, and cast to, the front bearing-bar, being cast on the inside of the bearing-bar, which allows the bearing-bar to be laid on the old furnace-bearings without changing the bearings, and dispenses with depending standard-fulcrum of the former patent.

Fig. 2 is a single-rib grate-bar, having semicircular pivots E E at the ends. It has a depending lug, C, with a slot, B, through it large enough to admit easily the end of the transverse bar, Fig. 4, A. Under steam-boilers I usually put a section of bars under each boiler, so that each boiler has a section of bars which can be rocked independent of the other sections. A section may be composed of bars like Fig. 2; or the outside bars may be like Fig. 2 and the intervening space may be filled with bars like Fig. 3.

Fig. 3 is a bottom view of a triple-ribbed grate-bar. The outside ribs R R are usually from three to six inches deep on full-sized bars. The parallel center rib N N is shallow, usually one-half the depth of the outside bars. The braces M M are of the same depth as the center rib N N. The lower edge of the parallel ribs R R N N and braces M M are of uniform diameter. The surface of the bar next to the fire, Fig. 1, L L L M M, is also of uniform diameter. P P represent the shoulder near the pivoted ends of the bar, made to avoid contact with the fulcrum V, Fig. 1, when in motion. Q Q are pivoted semicircular ends of the bar. O is a depending lug projecting from the center rib of the bar. This bar may have one or more parallel ribs like N N, and may be used as a rocking or non-rocking bar. The depending lug O is usually at a point distant from the fulcrum not exceeding one fourth the length of the grate-bar measured from shoulder to shoulder, P P, Fig. 4. This bar has a plain surface exposed to the fire-bed, and presents no obstructions to the use of poker, rake, or slice-bar. It requires less metal, and is more easily cast than the bar represented in the former patent.

Fig. 1 is a section of grate-bars composed of two single-rib and three triple-ribbed bars. One of the triple-ribbed bars is left out. Y is the rear bearing-bar. U at the end of the transverse bar shows how the bar is suspended to the side bar by passing through the slot. U in the open space shows the transverse bar; W, the slot through the bar; V, the fulcrum. X is the lever in position for rocking the bars, which is done by moving it right and left, causing each one of the bars to rock. H H in the front and rear bearing-bars are semicircles corresponding with the semicircular pivots on the ends of the bars. Z Z are side bars like Fig. 2. & & are triple-ribbed bars like Fig. 3. L L L are parallel ribs of the bar. M M M M are braces intersecting the parallel ribs L L L.

I claim as my invention—

The transverse bar, Fig. 4, provided with notched V-shaped ends, in combination with the grate-bars, Figs. 2 and 3, fulcrum F, and lever X, as shown at Fig. 1, for the purpose set forth.

ROBERT C. GRAVES.

Witnesses:

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A. L. GRAVES.