# M. E. Brown,

## Locomotive & Furnace Grates,

No. 42,526, Patented Apr. 26, 1864.

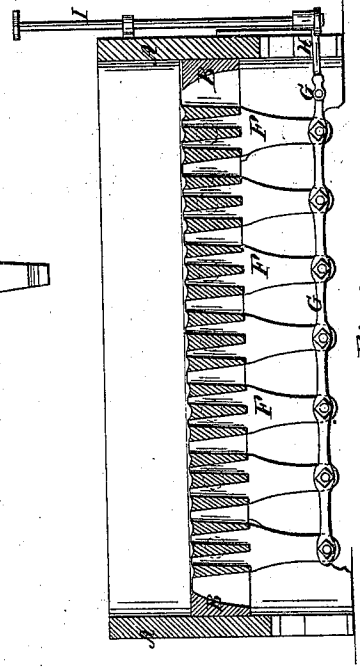



Fig. 3

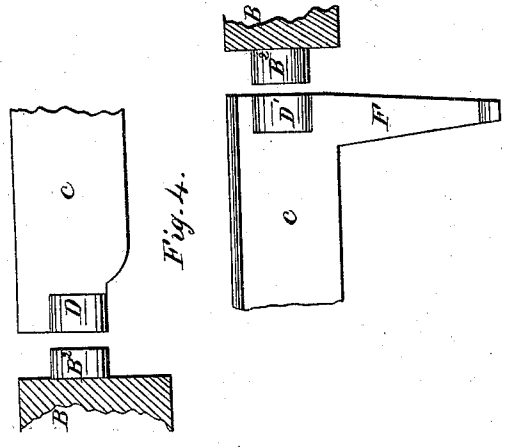



Fig. 4.

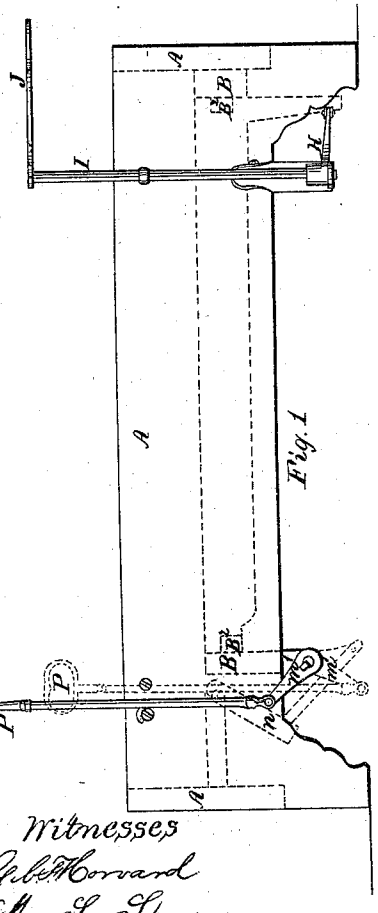



Fig. 1

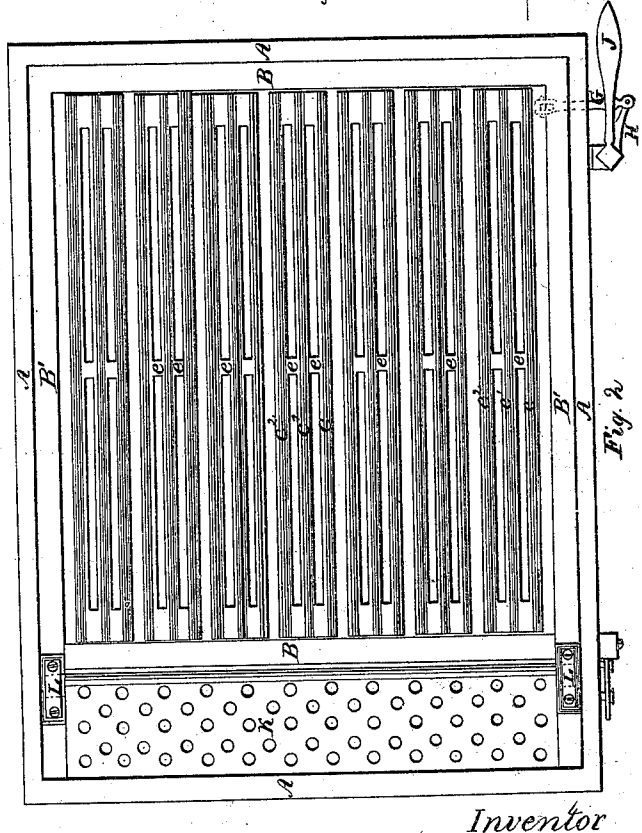



Fig. 2

Witnesses
Gibbs Howard
N. S. Shaw

Inventor
M. E. Brown

# UNITED STATES PATENT OFFICE.

MYRON E. BROWN, OF BUFFALO, NEW YORK, ASSIGNOR TO HIMSELF, FRANK O. DRULLARD, AND AMY C. HUBBARD, OF SAME PLACE.

## IMPROVEMENT IN LOCOMOTIVE AND FURNACE GRATES.

Specification forming part of Letters Patent No. **42,526**, dated April 26, 1864.

*To all whom it may concern:*

Be it known that I, MYRON E. BROWN, of the city of Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Dumpers and Oscillating Grates for Furnaces for Locomotives and other Engines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and the letters of reference marked thereon.

Figure 1 is a side elevation representing a portion of a furnace and the operating levers and rods, and side view of grate-bar in dotted lines. Fig. 2 is a plan or top view. Fig. 3 is a transverse section. Fig. 4 is a view of the socket ends of the grate-bars and the journal-pins of the bars B, upon which the grate-bars are suspended.

A is the outside of the furnace as the furnaces are ordinarily cast.

B B′ represent inside bars or a wall which supports the grate-bars. These inside bars may be made of cast-iron as a frame and set within the furnace to support the grate-bars, or in lieu thereof the side bars, B′, may be dispensed with and the cross-bars B at the ends only used, and in this case the cross-bars B may be made of wrought-iron and supported in some simple and suitable manner, or they may be connected with the furnace so that the grate-bars may be suspended thereon, which method is by some deemed preferable. The cross-bars B at the ends have journal-pins projecting therefrom, as shown at $B^2$, which receive and support the socket ends of each series or section of grate-bars and allow them to rock thereon.

In Fig. 2 the letters C C′ $C^2$ represent a series or sections of three or more grate-bars, parallel with each other and connected together at each end in such a manner as to form a socket-bearing at each end upon the under side, as represented at DD′, Fig. 4. This socket is left open at the bottom so as to facilitate the putting in and the removal of the grate-bars. The series of bars are also connected together in the center by means of cross-lugs, which serve to strengthen the bars and prevent them from warping. An arm, F, drops down from each of the series, and these arms are connected together by a connecting-bar, which is secured to each arm and connected to a crank, H, which is made fast to the lower end of the vertical rod I, so that by working the crank J, which is upon the upper end of the vertical rod I, each of the series or sections of grate-bars may be rocked simultaneously by the fireman, and the ashes and cinders dropped into the ash-pit below. These grate-bars are made of cast-iron, and their being in sections makes them more durable and less liable to warp by heat, and the connection of the series to the rod renders the operation of rocking them to clear them of ashes and cinders very easy and simple, and enables the fireman to keep them clear with very little trouble, and thus increase the draft. The arrangement also enables them not only to be cleared easily, but, in case of their burning out, any series or section may be quickly removed and new ones inserted.

The letter K, Fig. 2, represents a transverse grate upon which large cinders that will not easily pass through or between the grate-bars may be removed and dumped into the pit below. It is placed at the mouth of the furnace and hung upon journal-pins, as shown at L, and is easily operated by the fireman by means of a shaft, M, which has a crank, *m′*, at each end, and a connecting-bar, *n*, which takes hold of the dumper near the middle, and a handle, P, for operating the same and dumping whatever may be raked forward, which can always be done without extinguishing the fires. This is made of cast-iron and is full of holes for the admission of air and answers as so much grate-surface, and is adapted to increase the draft.

With my improvement it is not necessary to let the fires go down in order to remove the clinker, as it may be raked forward at any time upon this dumper and dumped into the ash-pit. The cranks and arrangements for operating both the dumper and the rocking-grate may be carried to a place convenient for the fireman. My rocking grate-bars are placed lengthwise of the furnace instead of crosswise or transverse, and the dumper is placed transverse to the bars, which is of great advantage for both in its operation and the ease with which ashes, cinders, and clinkers may be disposed of without stopping the fires, and it is of great advantage in securing a much more perfect draft to the furnace to have the grate-

bars lengthwise of the furnace, which location facilitates rather than impedes and clogs the draft as it would by placing them crosswise of the furnace.

Having thus described my invention, what I claim and desire to secure by Letters Patent is as follows—viz:

The perforated dumping-plate, in combination with the oscillating grate, when the plate is placed in front of and transversely to the grate, substantially as described, and for the purposes set forth.

M. E. BROWN.

In presence of—
GIB. F. HOWARD,
W. S. SHAW.