

(No Model.)

T. W. HEINTZELMAN.

LOCOMOTIVE GRATE BAR.

No. 347,601.

Patented Aug. 17, 1886.

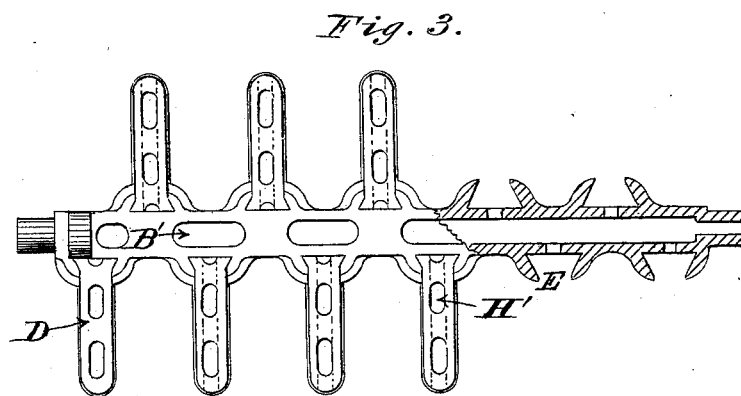
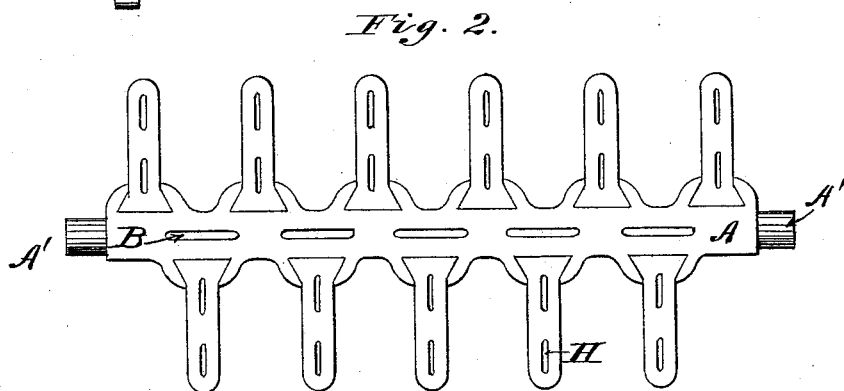
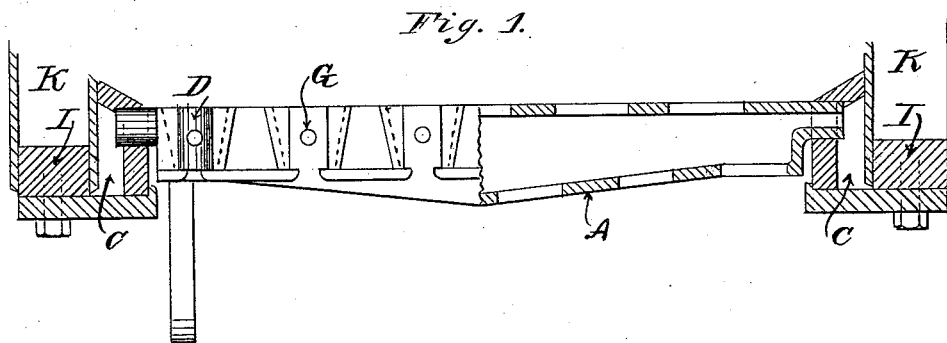


Fig. 4.



Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

TAYLOR W. HEINTZELMAN, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF
ONE-HALF TO WILLIAM McCORRY, OF SAME PLACE.

LOCOMOTIVE GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 347,601, dated August 17, 1886.

Application filed November 23, 1885. Serial No. 133,606. (No model.)

To all whom it may concern:

Be it known that I, TAYLOR W. HEINTZELMAN, a citizen of the United States, and a resident of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Locomotive Grate-Bars, of which the following is a specification.

My invention relates to a grate-bar designed particularly for locomotive-engines, though applicable with equally good results to stationary or marine engines or to other furnaces.

The objects I have in view are to provide a grate-bar through which air may pass freely to the furnace, and in which the openings in the bar cannot become choked or clogged; also to provide such a bar with detachable fingers, so that in case a single finger or more becomes injured it may be replaced without furnishing a new bar.

To these ends my invention consists, generally, in the construction and combination hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 represents a vertical section and partial elevation of one of my grate-bars, showing its position in the fire-box. Fig. 2 is a plan of the grate-bar. Fig. 3 is a bottom view partially broken away. Fig. 4 is a rear end elevation of one of the fingers. Fig. 5 is a longitudinal vertical section of one of the fingers.

In the drawings, A represents a hollow grate-bar. As here shown, the bar is of the rocking or oscillating class, having the rounded ends or journals A', by which it is supported in the fire-box. The bar A is hollow and provided with openings through its ends which communicate with suitable air-spaces, C, at the ends of the grate. In the upper surface of the bar a series of openings, B, are formed, and in the lower or under surface a series of openings, B'. The openings B' in the under surface are larger than the openings B in the upper surface. This construction prevents clogging of the bar, as the ashes, &c., that pass through the openings B into the interior of the bar will be sure to pass out of the bar through the larger openings B'. A free passage will therefore be kept for the air to pass through the grate-bar to the fire on the grate.

The upper and lower surfaces of the bar may be horizontal and parallel with each other, in which case the openings B' may be directly under the openings B; but I prefer to strengthen the bar by making it deeper in the center, as shown in Fig. 1, when the bottom will slope, as shown. The openings B and B' may then alternate with each other, as shown, and the material falling through the openings in the top will slide down the inclined bottom and pass out through the openings B'. I prefer to provide the bar A with a series of detachable fingers, D D, projecting laterally from each side thereof. When the bars are arranged in a grate, the fingers of one bar project between the fingers of the next succeeding bar in the usual way. The fingers may alternate with each other, as in Fig. 2, or they may be located opposite each other, as preferred. The sides of the bar are provided with a series of dovetailed recesses, E, and the ends of the fingers have corresponding dovetails that fit into the recesses in the bar. By this means each finger is separately detachable from the bar, and in case a finger becomes broken it may be removed and a new one inserted in place of it. Each finger D is provided with an opening, F, in the rear end wall thereof, which registers with an opening, G, in the side wall of the bar within the dovetailed recess E. By this means free communication is made from the interior of the bar to the interior of each finger, and the air may circulate from the bar into and through the hollow finger. The fingers D are also provided with a series of openings, H, in their upper surfaces and a series of larger openings, H', in their under surfaces. These openings are similar to and have a similar function to the openings in the main bar.

I do not confine myself to an oscillating grate-bar, as the invention may be applied to other forms of bars. I do not limit myself to any particular shape of bar or fingers, as the same may be varied without departing from my invention. Other suitable means may be used for securing the fingers detachably to the bar.

In Fig. 1, K represents the water-leg, and I the mud-ring of the boiler.

I claim as my invention—

1. A hollow grate-bar having a series of openings through its upper and lower walls, in combination with a series of hollow fingers projecting laterally from said bar, the openings in the interior of the bar communicating with the openings in the interior of the fingers, substantially as described, and for the purpose set forth.
 2. A hollow grate-bar having openings in its side walls, in combination with a series of laterally-projecting fingers having openings that communicate with the interior of the bar through the openings in its side walls, substantially as described, and for the purpose set forth.
 3. The combination, with the hollow grate-bar A, having the openings G through its side walls, of the detachable hollow fingers D, having openings F registering with the openings G in the walls of the grate-bar, all substantially as described, and for the purpose set forth.
 4. The combination, with the hollow grate-bar A, having the openings B in its top wall, the larger openings, B', in its lower wall, and the openings G in its side walls, of the detachable hollow fingers D, having the openings F registering with the openings G in the walls of the grate-bar, all substantially as described.
- In testimony whereof I have hereunto set my hand.
- TAYLOR W. HEINTZELMAN.
- In presence of—
E. J. MULICK,
M. GOLDBERG.