(No Model.)

G. A. HAGEMANN.

GRATE.

No. 354,785. Patented Dec. 21, 1886.

Fig. 1.

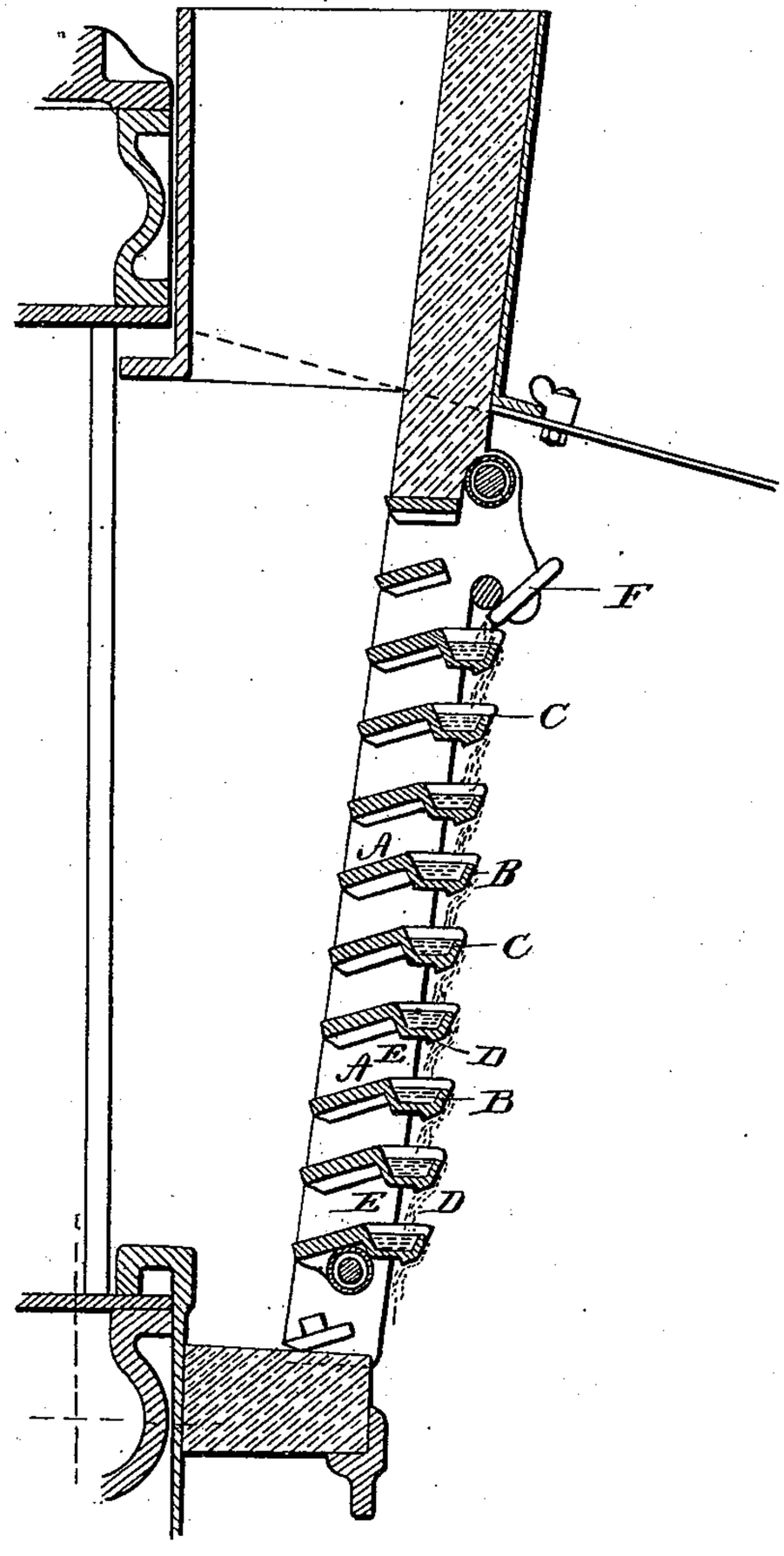
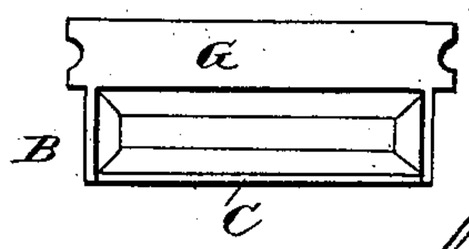


Fig. 2.



WITNESSES
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UNITED STATES PATENT OFFICE.

GUSTAV ADOLPH HAGEMANN, OF COPENHAGEN, DENMARK.

GRATE.

SPECIFICATION forming part of Letters Patent No. 354,785, dated December 21, 1886.

Application filed August 30, 1886. Serial No. 212,216. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV ADOLPH HAGEMANN, a subject of the King of Denmark, residing at Copenhagen, in the Kingdom of Denmark, have invented certain new and useful Improvements in Grates; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Figure 1 is a vertical sectional view of a nearly-vertical grate provided with my improvement; and Fig. 2 is a view, seen from above, of a slight modification of the improvement.

Similar letters of reference indicate corresponding parts in both the figures.

My invention has relation to vertical or nearly-vertical grates; and it consists in the improved construction and combination of parts of such grates, as hereinafter more fully described and claimed.

In vertical or inclined grates nearly vertical there has been a drawback in the shape of the great radiation of the heat between the grate-bars, and the consequent heating up of the boiler-room and vicinity of the furnace, rendering work in the vicinity of the furnace impossible or very inconvenient, and slag has likewise been liable to be formed within the fire inside of the grate, obstructing the draft through the grate and burning the grate-bars; and for the purpose of avoiding these drawbacks I provide each grate-bar with a water-trough, from which water may pass down to the trough upon the bar below, all the troughs forming a constant veil of water running down over the face of the grate, cooling off and receiving the radiating heat and creating steam and vapors, which will be carried into the furnace, increasing the combustion and loosening the slag and clinkers formed near the grate.

In the accompanying drawings, the letters A indicate the grate-bars, which are formed at their forward edges with troughs B, having the forward walls slightly lower than the other walls, as shown at C. The bottoms of these troughs are formed at the under sides with inwardly-facing shoulders D, having inclined forward sides, E, and a pipe, F, conveys water into the trough of the upper grate-bar. The water filled into the said trough will fill it and flow over into the trough below, the water following the forward inclined side of the shoulder and parting from the bottom of the trough at the shoulder, and it will thus be seen that the water will continue to run from one trough down into another, forming a film or veil of water between all the bars. This film or veil of water will absorb the radiated heat and will be partly formed into steam or vapor by the heat, which vapors will be drawn into the fire between the grate-bars, loosening the slag and clinkers formed by the fuel, so that the vicinity of the grate will be approachable and the fire freed from slag and clinkers.

In Fig. 2 is shown a detachable trough to be secured to common grate-bars in vertical or slightly-inclined grates, the flat portion G, at the inner edge of the trough, being secured to the ordinary grate-bar, the trough being similar to the trough integral with the grate-bar.

Numerous modifications may be made in this form of grate, for the purpose of adapting the improvement to different forms of grate-bars and to different fastenings for the grate-bars, without departing from the spirit of my invention.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a vertical or nearly-vertical grate, the combination of grate-bars having troughs at their outer edges and means for filling the upper trough and causing all the troughs to overflow into the troughs below, as and for the purpose shown and set forth.

2. In a vertical or nearly-vertical grate, the combination of grate-bars formed with troughs at their outer edges having the forward walls slightly lower than the other walls, and having shoulders upon the under sides facing rearward, and having inclined forward sides, with a water-pipe opening into the uppermost trough, whereby the water is caused to flow over the low front walls of the trough into the troughs below over the inclined faces of the shoulders, as and for the purpose shown and set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GUSTAV ADOLPH HAGEMANN.

Witnesses:
CARL GAMMELLOFT,
A. CRILLIEMKJOH.