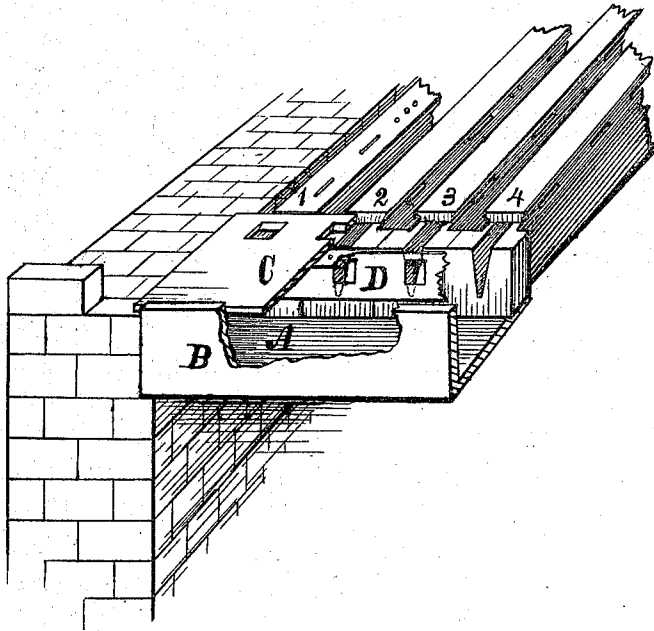


A. RAWSON.
Furnace Grate-Bars.

No. 141,890.

Patented August 19, 1873,



Witnesses.
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UNITED STATES PATENT OFFICE.

ALONZO RAWSON, OF DES MOINES, IOWA.

IMPROVEMENT IN FURNACE GRATE-BARS.

Specification forming part of Letters Patent No. **141,890**, dated August 19, 1873; application filed June 23, 1873.

To all whom it may concern:

Be it known that I, ALONZO RAWSON, of Des Moines, Iowa, have invented an Improvement for Furnace Grate-Bars, of which the following is a specification:

My invention is an improved means to distribute and force air from the grate-bars up through the fuel and fire, and also over the fuel and fire, from one reservoir, at the same time, and to regulate and alternate the blast above and below the fire, at pleasure, by simply moving a sliding cover; and also to keep the furnace-doors and the grate cool, and to prevent cinders from adhering thereto. It consists in joining the front ends of hollow and perforated grate-bars at right angles with a box-reservoir having a perforated cover, which forms a duplex sliding register, all as herein-after fully set forth.

My drawing is a miniature perspective view, illustrating the construction and operation of my invention.

1 2 3 4 represent a series of hollow grate-bars, closed at the rear ends and open at the front ends. Underneath the flanges, at their top edges, a series of slots or perforations are provided to allow the escape of the air forced in through the open front ends. These openings may vary in number, position, form, and inclination, as may be required, to direct and distribute the blast. Perforations may also be made in the top or roof of the bars as well as in the sides. The roofs of the front ends of the bars are removed to leave openings in the top, and to form a recess to admit and retain the sliding cover and duplex register.

A is the bottom of the box-reservoir; B is the front side. They are cast solid with end pieces, and the solid box is closed, excepting the rear side and top. C is a sliding cover, perforated on the rear side to form a register. The perforations correspond in number and position with the top openings at the front ends of the bars. They may vary in form and inclination. By making them angling rearward the blast can be directed in the same angle. D is a perforated plate, joined at right angles on the under side of the cover C. It may be cast solid with the cover C, or attached in any suitable way. The perforations

in the pendent plate D correspond in number and position with the end openings of the hollow bars. They should be uniform in size with the perforations in the sliding cover C, and on the opposite side of perpendicular lines drawn along one side of each opening in C.

When the perforations in the horizontal sliding cover C register with the top openings of the bars, the perforations in the pendent plate D will not register with the end openings of the bars, and vice versa. When the top openings are partly closed by the cover C, the end openings will be opened to that degree by the perforations in the pendent plate D, and vice versa. A duplex register is thus formed by which air may be regulated in quantity and distributed above and below the fuel and fire at the same time, or alternated above and below at pleasure.

The box-reservoir is designed to rest in the furnace door-frame, or to bridge the space between the front of the furnace-walls to support the front ends of the grate-bars.

When the T ends of the bars are placed upon the bottom A of the box-reservoir they close the rear side of the reservoir, and each hollow bar forms an air-distributing tube to distribute the blast under the fuel and fire.

By connecting a fan with the box-reservoir at any point most convenient and in any suitable manner, a blast of air can be readily distributed both under and over the fuel and fire at the same time, and, by means of the duplex sliding register, the blast can be regulated and controlled to suit the varying conditions of the furnace-fire. The cover C and pendent plate D, forming the duplex register, can be lifted on and off at pleasure. Any suitable catch, projection, or handle may be fixed on top to afford a hold for sliding and moving it.

The pendent plate D is shorter than the cover, and enters the box A B, and slides laterally against the open ends of the bars.

The sliding cover may be used without the pendent plate D, and may be fitted to the box-reservoir to move to and from the ends of the bars; and in place of the perforations, a continuous and adjustable slot may be made by moving the cover in and out.

The box-reservoir and sliding cover may be used with solid bars, to distribute air over the fire.

I claim as my invention—

1. The open box-reservoir A B and sliding cover and duplex register C D, when combined and operated with hollow grate-bars, substantially as described, and for the purposes specified.

2. The box-reservoir A B and sliding cover C, when combined and operated with hollow or solid grate-bars, in the manner described, and for the purposes specified.

ALONZO RAWSON.

Witnesses:

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