(No Model.)

C. T. STEPHENS.

FIRE GRATE.

No. 345,004. Patented July 6, 1886.

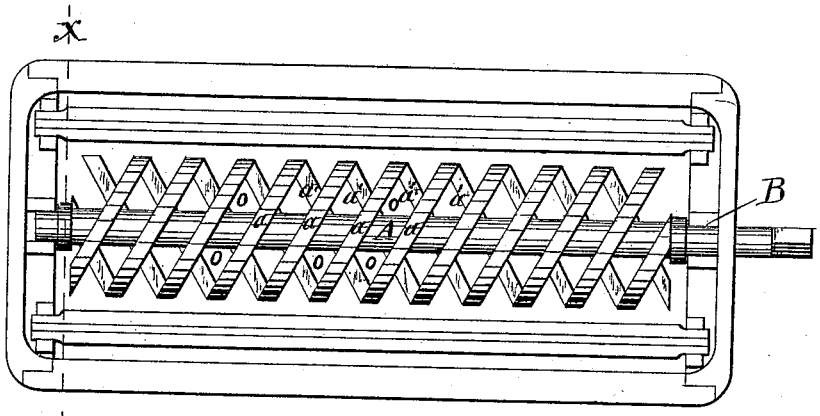

FIG-1-

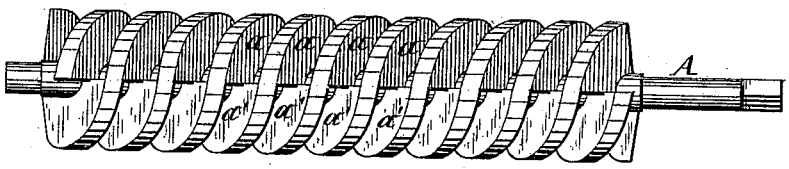

FIG-2-

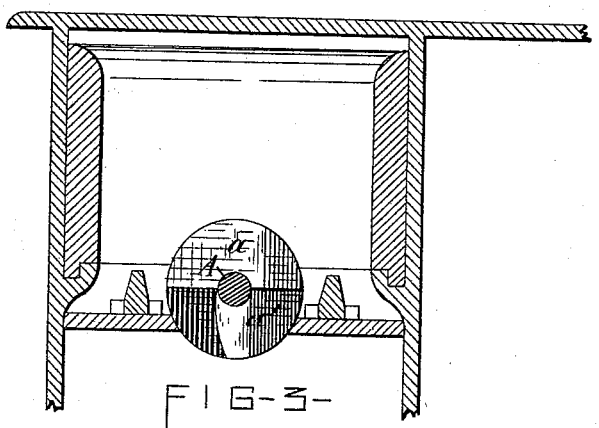

FIG-3-

ATTEST-
Wm. E. Baxmond.
E. C. Connon

INVENTOR-
Clements T. Stephens
per Dodd, Lawrence & Co.
his attys

UNITED STATES PATENT OFFICE.

CLEMENTS T. STEPHENS, OF ITHACA, NEW YORK.

FIRE-GRATE.

SPECIFICATION forming part of Letters Patent No. 345,004, dated July 6, 1886.

Application filed April 30, 1885. Serial No. 163,931. (No model.)

To all whom it may concern:

Be it known that I, CLEMENTS T. STEPHENS, of Ithaca, in the county of Tompkins, in the State of New York, have invented new and useful Improvements in Fire-Grates, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention consists in a novel construction of a grate-bar having two separate and distinct sets of ribs respectively at opposite sides of and meeting in a straight plane extending longitudinally through the axis of the bar, the ribs of each set being straight and parallel, and extending diagonally across the shaft or axis of the bar and reverse from the angle of inclination of the ribs of the other set, said bar being pivoted at its ends to allow it to be either rotated or oscillated, and when so operated it effectually scrapes the bottom of the fire, and allows the ashes to freely escape between the ribs of the bar, the disposition of said ribs forming ample openings through the bar for the aforesaid purpose, and also serving to effectually brace the bar, so as to prevent its warping or breaking, and, furthermore, admitting of easily molding and casting the bar.

In the accompanying drawings, Figure 1 is a top plan view of a fire-pot of a cooking-stove provided with my improved grate. Fig. 2 is a detached side view of said grate at right angles to that shown in Fig. 1; and Fig. 3 is a transverse section on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

A represents the shaft or axis of the grate, mounted at its ends in suitable bearings, B B, which allow the grate to be either rotated or oscillated, one end of said shaft being extended through the fire-pot and squared for the application of a wrench by which to agitate the grate-bar.

a a and *a' a'* designate two separate and distinct sets of ribs, arranged, respectively, at opposite sides of and meeting in a straight plane extending longitudinally through the axis of the bar. The ribs of each set are straight and parallel, and extend diagonally across the shaft A and across the ribs of the other set, which are disposed conversely in relation to the inclination of the former. The ribs of one set, being joined directly to those of the other set at their points of crossing, form a series of cross-braces, which effectually prevent the bar from breaking or warping, and form also a reticulated grate having ample openings, *o o*, as shown in Fig. 1 of the drawings, for the escape of the ashes, which are scraped from the bottom of the fire by either rotating or oscillating the grate.

By making the ribs straight and without the twist produced by spiral form I greatly facilitate the molding and casting of the grate-bar.

Although I have shown in the annexed drawings only one grate-bar in the fire-box, it is obvious that two or more of said bars can be placed side by side, according to the width of the fire-pot or furnace.

My invention must not be confounded with the well-known spirally-ribbed grate-bar; although the ribs of such a bar are continuous and parallel, yet they are not straight, but are twisted instead. Such a grate-bar has between its ribs weak portions extending spirally and uninterruptedly from end to end of the bar, and is therefore liable to bend or warp. This is effectually prevented in my improved grate-bar by the two distinct sets of ribs, forming conjointly a lattice-work, as shown in Fig. 1 of the drawings, and this lattice-work braces the bar thoroughly in all directions.

I am aware that grate-bars have been formed with diagonal ribs at opposite sides, and with the ribs of one set disposed reverse in relation to the inclination of the ribs of the other set; but in such bars the ribs of the two sets did not meet, but were separated from each other by an intervening straight longitudinal central portion of the bar, and the top of the bar presents a broad surface, whereas my improved grate-bar presents diagonal ribs on top, and can be placed in a position to form a reticulated bar.

What I claim as new, and desire to secure by Letters Patent, is—

1. A grate-bar having two separate and distinct sets of ribs respectively at opposite sides of and meeting in a straight plane extending longitudinally through the axis of the bar, the ribs of each set being straight and parallel,

and extending diagonally across the axis of the bar and conversely in relation to the angle of inclination of the ribs of the other set, substantially as described and shown.

2. The reticulated grate-bar composed of a pivoting-shaft and two separate and distinct sets of ribs disposed at opposite sides of and meeting in a straight plane extending longitudinally through the shaft, the ribs of each set being straight and parallel, and extending diagonally across the shaft and conversely in relation to the angle of inclination of the ribs of the other set, and formed with openings *o o* between their meeting edges, substantially as described and shown.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 15th day of April, 1885.

CLEMENTS T. STEPHENS. [L. S.]

Witnesses:

FREDERICK H. GIBES,

WM. C. RAYMOND.