S. SMYTH.

Grate for Stoves and Furnaces.

No. 212,407. Patented Feb. 18, 1879.

Fig. 2.

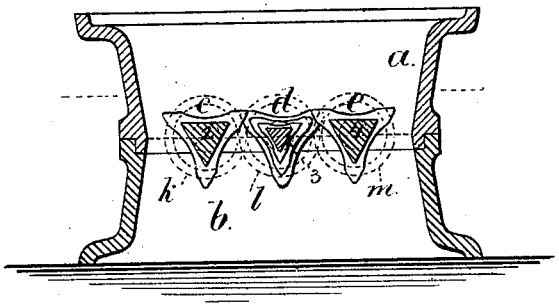


Fig. 1.

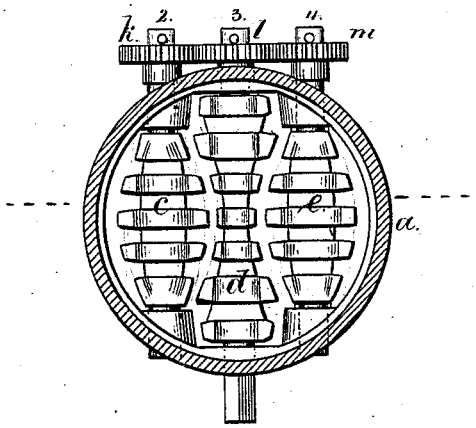
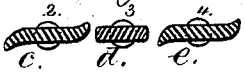


Fig. 3.



Witnesses

Chas. H. Smith

Harold Serrell

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per Samuel W. Serrell

attg.

UNITED STATES PATENT OFFICE.

SAMUEL SMYTH, OF PITTSTON, PENNSYLVANIA.

IMPROVEMENT IN GRATES FOR STOVES AND FURNACES.

Specification forming part of Letters Patent No. **212,407**, dated February 18, 1879; application filed December 23, 1878.

To all whom it may concern:

Be it known that I, SAMUEL SMYTH, of Pittston, in the State of Pennsylvania, have invented an Improvement in Grates for Stoves and Furnaces, of which the following is a specification:

In Letters Patent No. 208,767, granted to me, a triangular bar is represented having transverse surface-bars, the ends of which project beyond the edges of the triangular bars.

Reversible grates have been made in a circular form, with cross-bars upon a revolving shaft; and in a circular grate there has been a central section of cross-bars upon a longitudinal shaft; and grate-bars have been made of hollow metal cases, roughened upon the outside, such cases being three in number, the outer ones being largest in the middle and the center one being smallest in the center.

In my grate the fire-surface is flat, or nearly so, and the outer sections are convex in their general outline, and the middle section is concave in its general outline, and in all instances the short bars run across the body of the bar, so that the grate is open for the free passage of the air.

In the drawings, Figure 1 is a plan of the grate and section of the fire-pot. Fig. 2 is a vertical section of the grate; and Fig. 3 is a section, showing the reversible grate in a modified form.

The fire-pot *a* is either circular or elliptical, and it is supported upon a suitable inclosure, *b*, for the ash-pit.

The grate-sections *c d e* are provided with trunnions 2 3 4, that rest in bearings upon *b*; and at one end the trunnions are extended to form shafts, that are provided with gears *k l m*, by which the grate-sections are caused to move together when either one is turned. I prefer to have the grate-sections geared together; but the gearing might be dispensed with if squares for a rattler or wrench are provided upon the ends of the section-trunnions.

The general outlines of the sections *c* and *e* are convex, so that they correspond to the curvilinear shape of the interior of the fire-pot, regardless of which surfaces of the said segments *c* and *e* may be uppermost.

In consequence of this double convex outline for the sections *c* and *e*, the space between the sections *c e* requires a section with concave edges to fill it. These sections *c d e* may be flat, with the concave and convex edges aforesaid, as illustrated in Fig. 3; but by making the sections triangular, as shown in Fig. 2, they are stronger and have three wearing-surfaces.

In rattling the fire the bars may be partially revolved first one way and then the other, or completely revolved, and clinkers may be removed or broken up by such motion.

The prismatic bars may have the projecting cross-bars in the same plane, or nearly so, on each side; or the said surfaces may be made in a winding or spiral form, if desired.

I claim as my invention—

1. The combination, in a grate, of two sections, each having a longitudinal bar with surface cross-bars and a general convex outline, and an intermediate section with similar surface cross-bars and a general concave outline, substantially as set forth.

2. The combination, in a grate, of three sections, each of which is prismatic and provided with surface cross-bars, the ends of which project to different distances, so that the general outlines of the central section are concave and of the outer sections convex, substantially as set forth.

Signed by me this 11th day of December, A. D. 1878.

SAMUEL SMYTH.

Witnesses:
L. B. ENSIGN,
S. HUNT.