(No Model.)

C. L. BEERS.

STOVE GRATE.

No. 423,721. Patented Mar. 18, 1890.

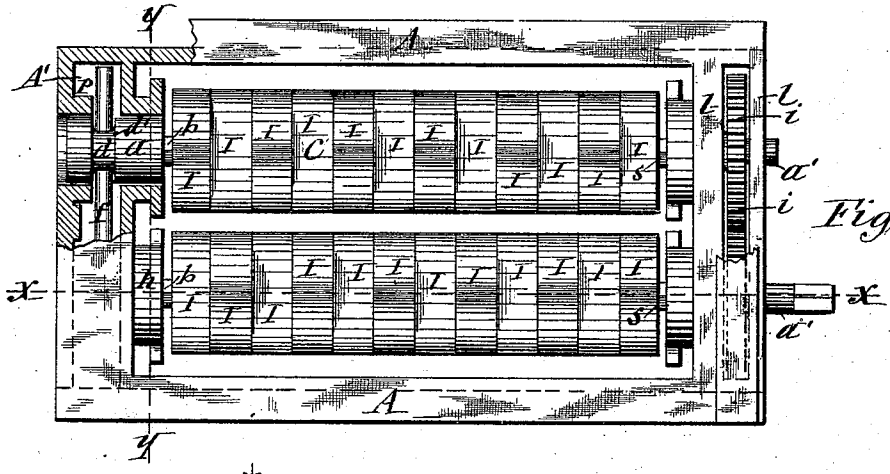


Fig. 1

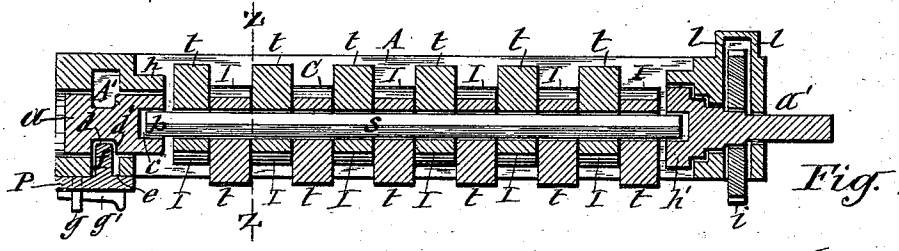


Fig. 2



Fig. 6

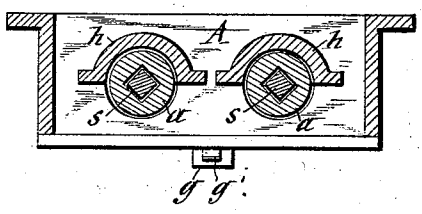


Fig. 3

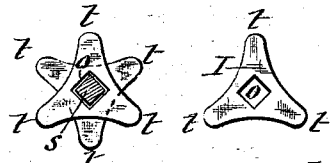


Fig. 4 Fig. 5

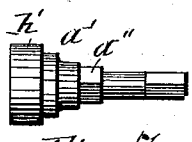


Fig. 7

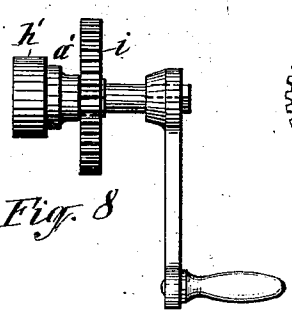


Fig. 8

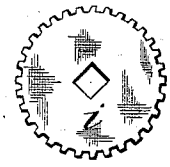


Fig. 10

WITNESSES

C. L. Bendixon

Mark W. Dewey



Fig. 9

INVENTOR:

Charles L. Beers

BY

Hull, Lacasse & Hull

his ATTORNEYS.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

CHARLES L. BEERS, OF SCRANTON, PENNSYLVANIA.

STOVE-GRATE.

SPECIFICATION forming part of Letters Patent No. 423,721, dated March 18, 1890.

Application filed November 21, 1889. Serial No. 331,111. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. BEERS, of Scranton, in the county of Lackawanna, in the State of Pennsylvania, have invented new and useful Improvements in Stove-Grates, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates, chiefly, to grates of cooking-stoves and ranges, although in some respects adapted for grates of furnaces of various forms.

The object of the invention is chiefly to provide a grate which shall be adapted to be easily removed from its supporting-frame and easily repaired and replaced without disturbing either the fire-brick lining or water-back or water-front or, in fact, any portion of the walls of the fire-box above the grate; and the object of the invention is also to provide a rotative grate, which shall be efficient in its operation and adapted to be left at any point of its rotation without impairing its efficiency; and to that end the invention consists in the novel construction and combination of parts hereinafter fully described, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a top plan view of a grate embodying my invention, a portion of the frame being broken away to illustrate the arrangement of the removable journal of the grate-bar. Fig. 2 is a vertical longitudinal section on line $x\ x$, Fig. 1. Fig. 3 is a vertical transverse section on line $y\ y$, Fig. 1. Fig. 4 is a transverse section of one of the grate-bars taken on line $z\ z$, Fig. 2. Fig. 5 is a side elevation of one of the grate-bar sections. Fig. 6 is a detached perspective view of the shaft of the grate-bar. Figs. 7 and 8 are detached side views of the journal without and with the gear-wheel. Fig. 9 is a detached perspective view of the catch or locking-bar by which the journals are retained in the frame, and Fig. 10 is a side elevation of one of the gear-wheels of the grate.

Similar letters of reference indicate corresponding parts.

A denotes the supporting-frame of the grate, which frame may be of any suitable form for supporting either a brick lining or a water back or front above the grate.

C C represent rotative or rocking grate-bars, the axial supports of which I make separate and detachable from the grate-bars and seat them in the frame A, so as to be also detachable from the latter or movable longitudinally therein or to and from the grate-bars in any suitable manner. I preferably, however, employ for said axial supports journals a and a', both of which are detachable from opposite ends of the grate-bar.

The journal a, which supports one end of the grate-bar, is extended through a compartment A′, formed across one end of the frame A, as shown in Fig. 1 of the drawings, and is pivoted in the walls of said compartment, and projects from the inner side of the frame A sufficiently to receive the end of the grate-bar C, which I preferably connect to said journal by a polygonal lug b on the end of the grate-bar entering a corresponding polygonal socket c in the inner end of the journal, and thus compelling the grate-bar to turn with the journal. To prevent longitudinal movement of the said journal, and thus maintain the same in its connection with the grate-bar, I form the journal with a circumferential groove d or shoulder d' and insert in said groove or place against the shoulder a suitable catch, which I prefer to form of a plate P, placed across an opening e in the bottom of the compartment A′ and provided with a tongue f, which enters the groove d and abuts against the shoulder d', said plate being detachably secured to the frame A by a lug g, projecting from the frame and through an aperture in the plate and having a key g' passing through its protruding end, as shown in Fig. 2 of the drawings.

To protect the protruding inner end of the journal a, I form the wall of the frame A with an inward-projecting shield h, which covers the said journal. The journal a' on the opposite end of the grate-bar is removable inward from the frame A, and is formed with a collar h', by which it abuts against the inner side of the frame. The shank of this journal is formed with a square or polygonal portion a'', on which is mounted a gear-wheel i, meshing with a corresponding gear-wheel on the companion grate-bar. Said gear-wheel is provided with a square or polygonal eye, by which it is seated on the polygonal portion of the journal-shank and is removable endwise

from the same, and is retained thereon by guards *l l* on the frame A at opposite sides of the gear-wheel.

The grate-bar I form of a polygonal shaft *s* and blocks or sections I I I, which latter are formed separate from each other and each of triangular shape in its vertical plane and provided with a central polygonal eye *o*, by which it is detachably mounted on the aforesaid shaft, the alternate sections having said eye disposed with its angles in the same positions in relation to the teeth *t t t* of the respective sections, and the intermediate sections having the eye *o* disposed with its angles in positions relatively midway between the angles of the eyes of the aforesaid alternate sections, so that each section stands with its teeth *t t t* at angles intermediate of those of the adjacent sections, as illustrated in Fig. 4 of the drawings.

In some cases only one of the described grate-bars may be employed; but in the majority of cases a plurality of said bars are required, and consequently in the latter case a corresponding plurality of journals *a a'* will be seated removably in the frame A.

The grate-bar is readily removed from the supporting-frame A by first removing the catch or plate P and then drawing the journal *a* outward from the frame sufficiently to release said journal from the grate-bar.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the frame, of a journal seated movably longitudinally in the frame and provided with a circumferential groove or shoulder, the grate-bar detachably connected to the inner end of said journal, and a plate detachably connected to the frame and provided with a tongue entering the groove of the journal, substantially as set forth and shown.

2. The combination of the frame formed with a compartment across its end and with an opening through the bottom of said compartment, a journal extending transversely through said compartment and seated removably in the frame and formed with a circumferential groove in the compartment, a plate detachably connected to the frame and closing the aforesaid opening and provided with a tongue entering the groove of the journal, and the grate-bar detachably connected to the inner end of the journal, substantially as described and shown.

3. In combination with the frame, a plurality of journals seated movably longitudinally in the frame and provided on their inner ends with collars abutting against the inner side of the frame and formed with polygonal shank portions, intermeshing gears seated on said shank portions and removable endwise therefrom, guards on the frame at opposite sides of said gears, and grate-bars detachably connected to the inner ends of the journals, as set forth and shown.

4. In combination with the frame, two sets of journals seated movably longitudinally in opposite ends of the frame and provided in their inner ends with polygonal sockets, a catch on one end of the frame adapted to lock the set of journals thereat from longitudinal movement, collars on the inner ends of the other set of journals abutting against the inner side of the frame, intermeshing gears seated on the latter journals and removable endwise therefrom, guards on the frame at opposite sides of the gears, a polygonal shaft adapted to be inserted in the sockets of the aforesaid journals, and toothed sections mounted removably on said shaft, substantially as described and shown.

5. The improved grate-bar composed of the polygonal shaft *s*, and the sections I I I, formed separate from each other, and each of said sections of triangular shape in its vertical plane and mounted removably on the aforesaid shaft, and disposed with its teeth *t t t* at angles intermediate of those of the adjacent section, substantially as described and shown.

In testimony whereof I have hereunto signed my name and affixed my seal this 19th day of November, 1889.

CHARLES L. BEERS. [L. S.]

Witnesses:
J. J. LAASS,
H. M SEAMANS.