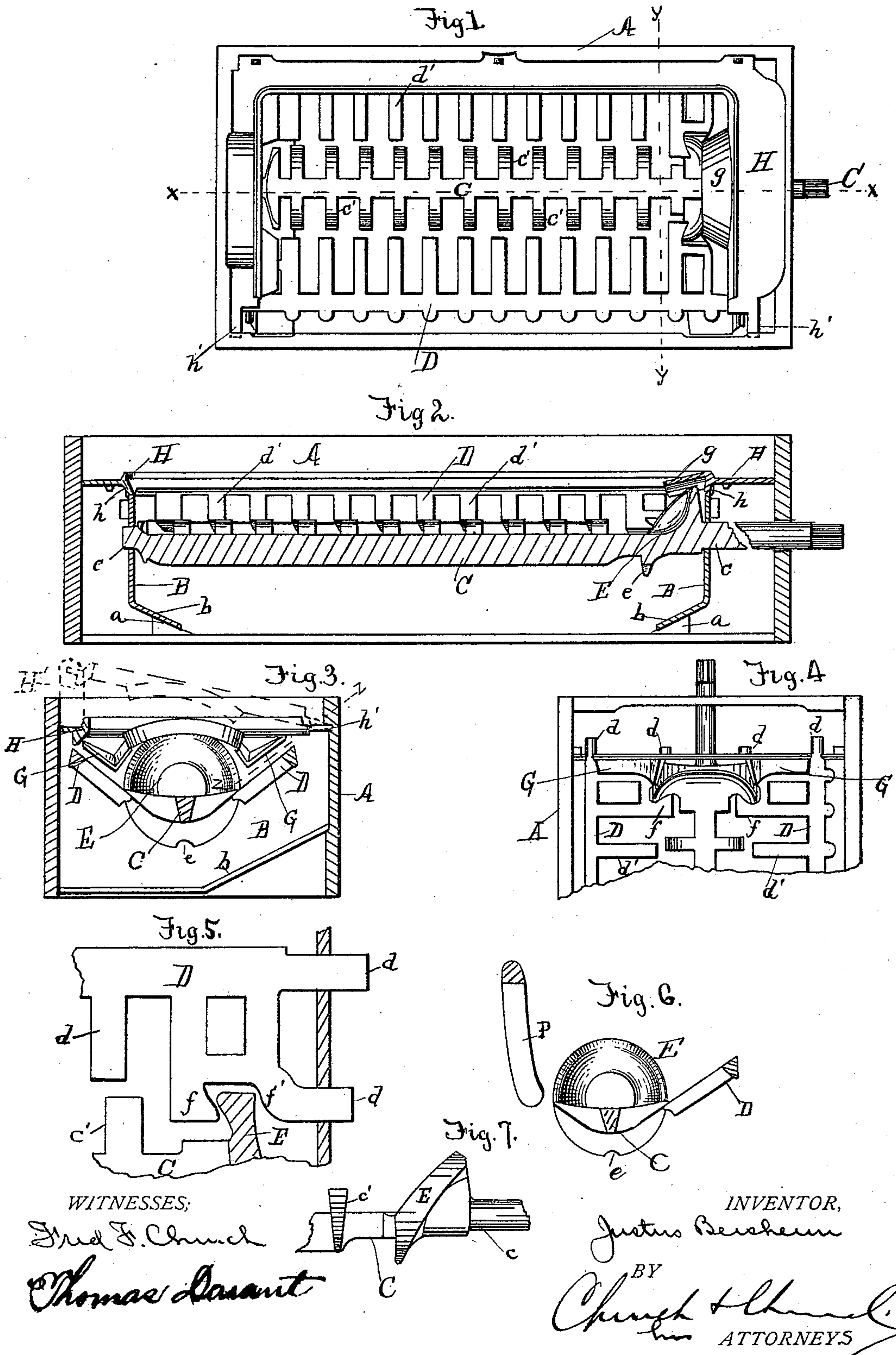


(No Model.)

J. BEISHEIM.
GRATE.

No. 449,029.

Patented Mar. 24, 1891.



UNITED STATES PATENT OFFICE.

JUSTUS BEISHEIM, OF ROCHESTER, NEW YORK.

GRATE.

SPECIFICATION forming part of Letters Patent No. 449,029, dated March 24, 1891.

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To all whom it may concern:

Be it known that I, JUSTUS BEISHEIM, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Grates; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

My invention relates to improvements in grates particularly for use in stoves, and has for its objects to provide a grate by which not only can the whole of the bed of fuel be agitated or shaken as much as desired, but a portion or the whole thereof can be cut out or dumped into the ash-pit below; and also to provide a grate simple and cheap in construction.

To these ends the invention consists in certain novelties of construction and combinations of parts, all as will be hereinafter fully described, and the novel features pointed out in the claims at the end of this specification.

In the drawings, Figure 1 is a plan view of a grate constructed in accordance with my invention; Fig. 2, a longitudinal sectional view thereof on the line $x x$ of Fig. 1; Fig. 3, a cross-sectional view on the line $y y$ of Fig. 1; Fig. 4, a top plan view of the end of the sections, with the covering plate removed showing the actuating devices; Fig. 5, a section on the line $z z$ of Fig. 3; Fig. 6, a section of a modification; Fig. 7, a side view of the cam or disk on the rotary section.

Similar letters of reference in the several figures denote similar parts.

The letter A indicates the stove-casing or the frame supporting the grate, having near opposite ends plates B resting on lugs or abutments—such as $a a$ on frame A—and provided with deflecting flanges b at the lower portions, as shown.

In the upper portions of plates B are provided apertures or recesses in which the projections or arms $d d$ on the side sections D of the grate have their bearings, while slightly below them are provided apertures in which the journals c of the central grate-section C have their bearings. The grate-sections D are arranged on opposite sides of the fire-pot and are provided with a series of inclined fin-

gers d' , arranged to project in close proximity to the ends of cutting fingers or projections c' , formed on the central section C, arranged slightly below. The central section C, which I term the "rotary section," is, as stated, journaled in the plates B, and is adapted to be rotated or oscillated by a suitable handle applied to its angular end, and near said end, but inside plate B, is a disk or cam E, dished or hollowed slightly on its inner side and provided with a notch e in its under side, as shown, said cam projecting between two of the end fingers $f f'$ of the sections D, so that as the section C is oscillated in its bearings the parts D will be reciprocated back and forth alternately, causing a thorough agitation of the fire-bed to the extreme edges and causing the fine ashes and clinkers to fall through the openings between the fingers and the larger portions to slide down upon section C, when they may be removed by a full rotation of the latter, serving to cut out the central portion of the bed of fuel and dump it into the ash-pit.

Near the upper portions of the plate B are arranged deflecting flanges G, which project over the ends of the sections D and prevent ashes or coals from lodging between them and the plates, thereby interfering with the action of the grate. By making the inner side of the disk E hollowed, as shown, and curving inward the fingers f , not only will the lodgment of ashes and coals be prevented, but the binding caused by the twisting or lateral movement of the sections D when reciprocated will be prevented and said sections caused to move in right lines without binding in their bearings.

H indicates a plate operating as a cover for the operating portions of the grate and also serving, if desired, as a support for the fire-brick or lining H' of the fire-pot, said plate being provided with flanges h at the ends co-operating with plates B and at one end with the covering or deflecting flange g for protecting the cam or disk E. This latter flange might be formed on one of the plates B, if desired; but I prefer the arrangement shown. Plate H is provided at one side with lugs h' , which engage recesses formed in the main frame, so that when in position it will be locked by the fire-pot lining H' ; but when the

latter is removed said plate may be turned up, as indicated by the dotted line, Fig. 4, and the lugs disengaged, as will be understood. When the plate H is removed, one or both of the plates B can be drawn vertically and the fingers *f* sliding out through the slit *e* in the cam, which is turned, so as to cause them to register and new sections inserted when desired or necessary.

Instead of employing two reciprocating side sections D, as described, one only could be employed, the arrangement being substantially as in Fig. 6, the grate P at the forward portion being stationary, as in the ordinary cooking-stove grates now in use.

The operation of the various parts will be understood from the foregoing, and it will be seen that all parts of the fire can be thoroughly agitated and all or portions of it dumped or cut out when desired without opening the stove and using a poker to dislodge those portions at the edges of the grate.

Various modifications will suggest themselves to those skilled in the art, and I therefore do not desire to be confined to precisely the construction herein shown.

I claim as my invention—

1. In a grate, the combination, with the central rotary oscillatory section having the cam or disk thereon, of the two side sections reciprocating lengthwise of and relative to the central section and actuated by the cam thereon, substantially as described.

2. In a grate, the combination, with the two side sections arranged to slide in straight bearings, of the central rotary oscillatory section having the cutting fingers or edges and the cam or disk thereon co-operating with the side sections and causing their reciprocation, substantially as described.

3. In a grate, the combination, with the two side sections arranged to slide in straight bearings and having the fingers thereon, of the central rotary oscillatory section having the cam or disk and the cutting teeth or edges, substantially as described.

4. In a grate, the combination, with a rotary oscillatory section having a cam or disk thereon, of a reciprocatory section arranged at the side of said rotary section and co-operating with the cam thereon, whereby the rotary

movement of the first-mentioned section will cause a reciprocation of the latter relative to it, substantially as described.

5. In a grate, the combination, with an inclined longitudinally-reciprocatory grate-section, of a rotary oscillatory grate-section having cutting teeth or edges arranged below said first-mentioned section and having a cam or disk co-operating therewith for causing its reciprocation when the rotary section is moved, substantially as described.

6. In a grate, the combination, with a longitudinally-reciprocatory grate-section having curved fingers thereon, of a rotary oscillatory grate-section having a dished or hollowed cam or disk thereon co-operating with the curved fingers on the first-mentioned section, substantially as described.

7. In a grate, the combination, with the reciprocatory grate-sections having the end extensions, the plates in which they slide having the flanges for protecting said ends, of the central rotary section having the cam or disk thereon co-operating with and operating the reciprocatory sections, and the covering-plate having the flange for protecting said cam, substantially as described.

8. In a grate, the combination, with the main frame or casing, the plates B, and the reciprocatory sections having their bearings therein, of the central rotary section having the cam or disk co-operating with the other grate-sections journaled in said plates, and the cover-plate co-operating with the plates B, substantially as described.

9. In a grate, the combination, with a reciprocating grate-section having the fingers, of the central rotary section having the cam or disk having the slot *e* therein and co-operating with and reciprocating the first-mentioned section, substantially as described.

10. In a grate, the combination of the main frame, the vertical plates, the grate-sections having bearings therein, and the cover-plate co-operating with the vertical plates and having the engaging lugs on one side co-operating with the main frame, substantially as described.

JUSTUS BEISHEIM.

Witnesses:

FRED F. CHURCH,
A. A. DAVIS.