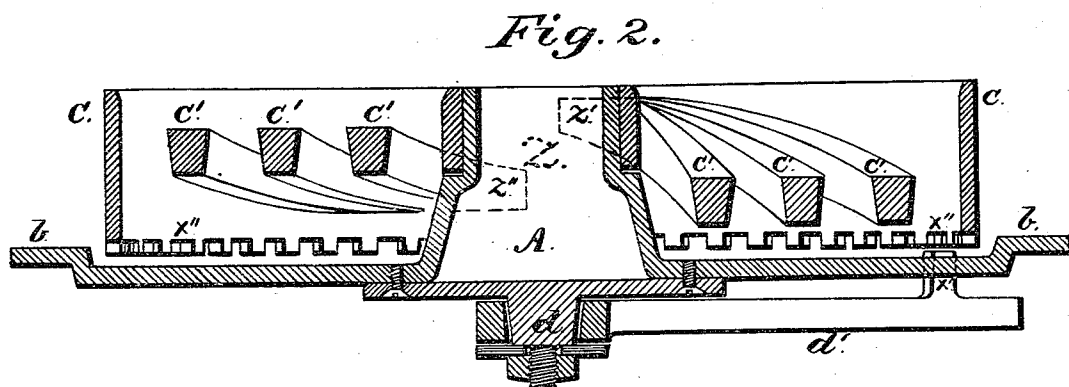
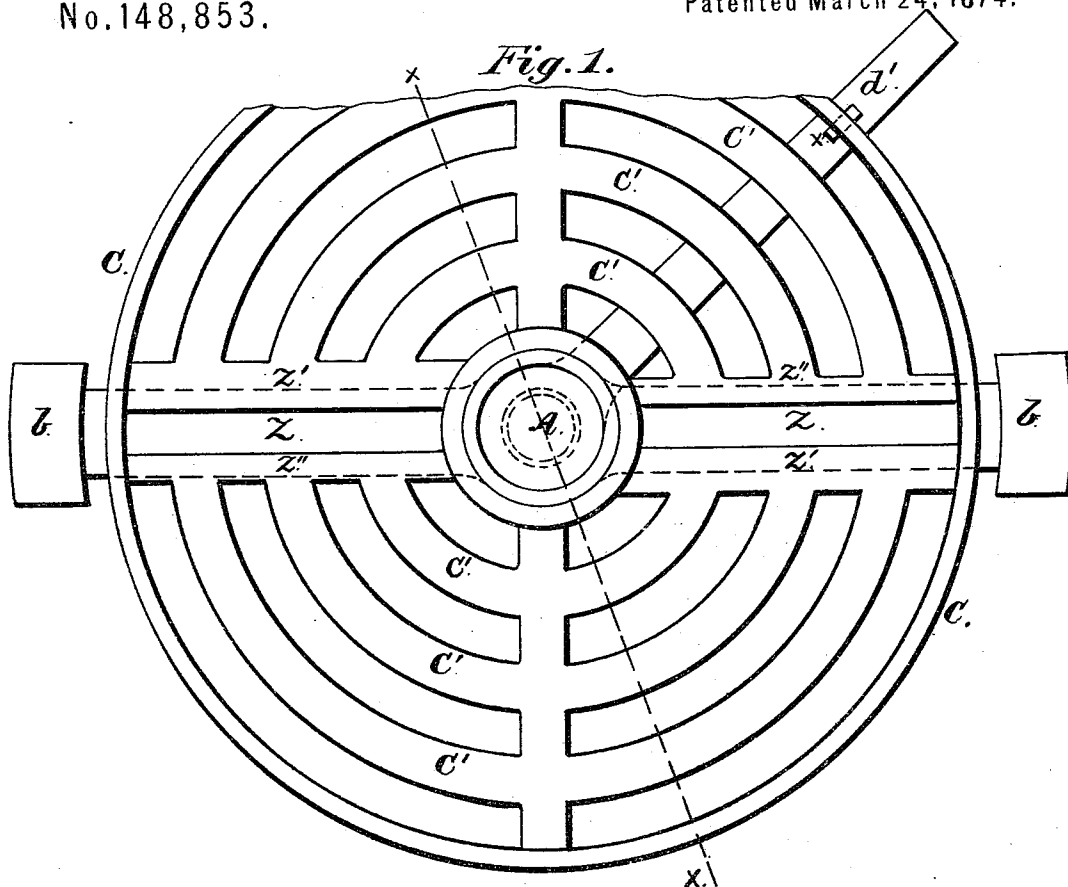


R. SALT & R. K. CAVANAUGH.
Grates for Stoves, &c.

No. 148,853.

Patented March 24, 1874.



Witnesses.

Leander R. Bingham
William Carver

Inventors.

Raymond Salt
Robert K. Cavanaugh

UNITED STATES PATENT OFFICE.

RAYMOND SALT, OF NEW YORK, N. Y., AND ROBERT K. CAVANAUGH, OF
EAST ORANGE, NEW JERSEY.

IMPROVEMENT IN GRATES FOR STOVES, &c.

Specification forming part of Letters Patent No. **148,853**, dated March 24, 1874; application filed
January 24, 1874.

To all whom it may concern:

Be it known that we, RAYMOND SALT, of New York, N. Y., and ROBERT KINKAID CAVANAUGH, of East Orange, New Jersey, have invented an Improved Grate for Stoves, Furnaces, Upright Boilers, &c., of which the following is a specification:

Our grate is supposed to be cast in one piece, and circular in general form. It is an agitating grate, arranged to vibrate to and fro, or revolve entirely around its central support, horizontally, in either direction. Its bars, which, in cross-section, may be of any approved form, are in concentric circles, and the bars, as a whole, may constitute a single spiral of one turn, or a series of two, as shown, or more circular inclined planes or spiral segments, nearly lapping each other, in vertical view, but leaving considerable openings horizontally between the termini of the segments. The space (in practice very little) left in vertical view between the ends of the segments of the grate on Fig. 1 is purposely exaggerated for greater clearness.

We will now refer to the drawing, on which Figure 1 represents a plan view of our grate, and Fig. 2 a vertical cross section through line *xx* of the latter.

A is a hollow, circular, fixed, and open neck, by which the grate is supported, and on which it turns, and which, in its turn, is supported by the cross-bar *b*, secured to the ash-pit or other part of the stove, for example, in any convenient manner. C is the outer rim of the grate, connecting its bars *C'*, and lies in a horizontal plane. At *Z Z* are the openings between the upper end *Z'* of one inclined segment of the grate and the lower end *Z''* of its counterpart. The lower edge of the grate-rim C is toothed or cogged entirely around. Held on a support, *d*, on which it can turn centrally below the cross-bar *b*, is a horizontal lever, *d'*, for moving the grate. It is sufficiently loose on *d* to permit it to be raised and lowered a little, so that a tooth or projection, *X'*, on its upper side, may engage between the teeth or cogs *X''* on the lower edge of C, and vice versa, by which the grate may be agitated right and left, or moved entirely around.

By an ordinary agitating grate, the lower portion only of the superincumbent coals is moved, and the ashes separated therefrom; but our grate, when vibrated, or turned in one direction at least, causes the entire mass of the fuel to alternately rise and fall with a suddenness (so to express it) and force proportionate to the quickness with which the grate is turned, as will be understood, and the ashes are thus shaken down, and dropped from the fuel throughout. Again, to remove the whole mass of fuel from the ordinary grate the latter must be dumped, or removed in whole or part, and, of course, replaced; but, by turning our grate in the opposite direction to that above referred to as far, or as many revolutions, as may be necessary, either the bottom clinkers only may be removed, or the whole of the fuel, which, in this manner, is scooped into, and dropped out through, the openings *Z*, somewhat after the manner of the action of a turbine wheel, the grate representing the latter, and the fuel the water.

The open neck A embraces, besides the function of supporting the grate, the important one of supplying a copious central draft well up into the mass of the fuel, independently of the comparatively-obstructed supply through the grate, and we have anticipated supplying A with its special damper.

It is deemed that further explanation of the nature and advantages of our grate will be unnecessary.

We are aware that grate-bars have been made triangularly, with an inclined side, but we do not claim these; but

We claim as our invention—

A horizontally-agitating grate consisting of two or more circular inclined sections or spirals, open between their respective extremities, substantially as and for the purpose described.

RAYMOND SALT.
ROBERT K. CAVANAUGH.

Witnesses:

LEANDER K. BINGHAM,
WILLIAM CASSIDY.