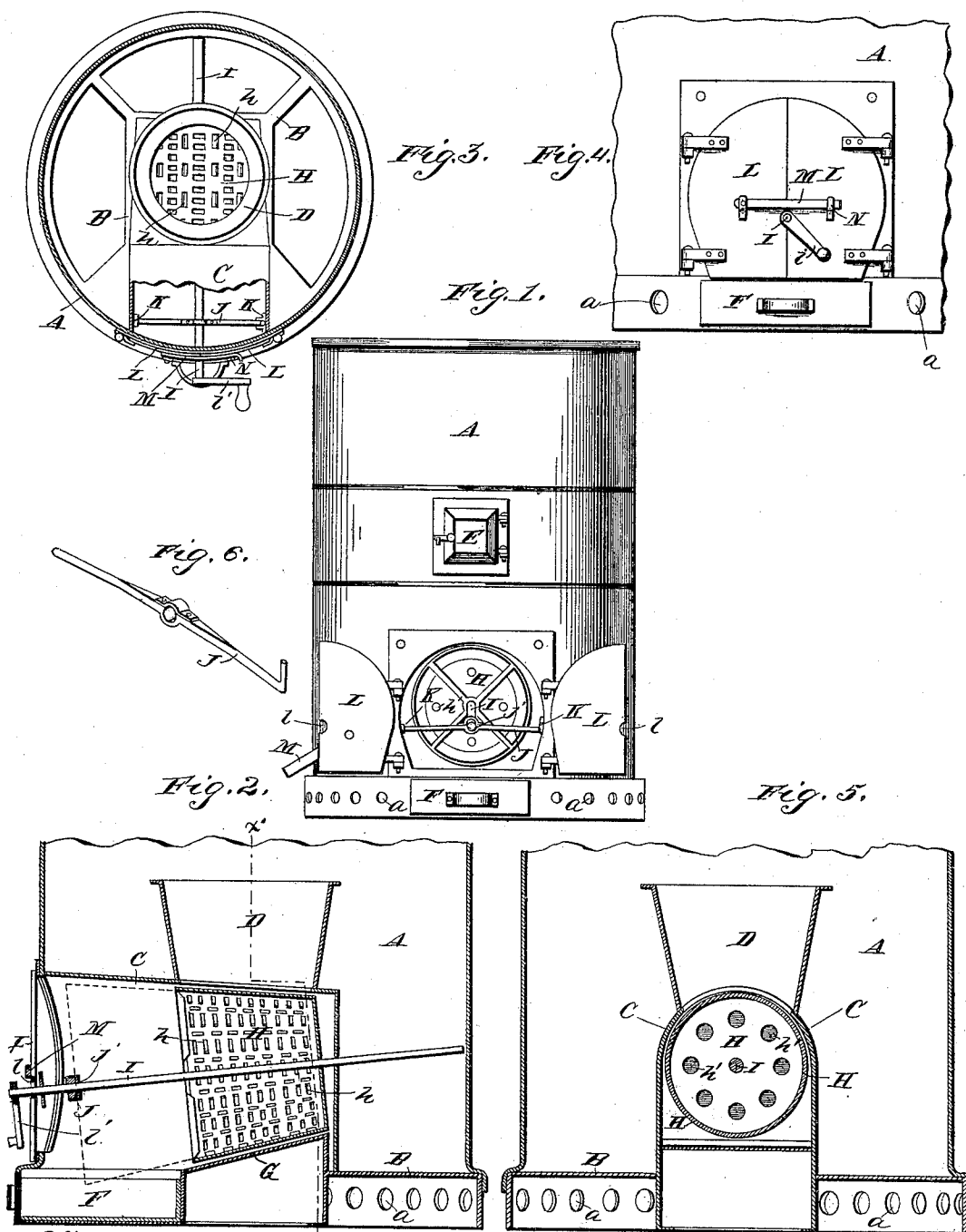


(No Model.)

R. & F. R. HUBBELL.
GRATE.

No. 358,555.

Patented Mar. 1, 1887.



Witnesses

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UNITED STATES PATENT OFFICE.

RICHARD HUBBELL AND FREDERICK REEDER HUBBELL, OF LAKE VIEW,
ILLINOIS.

GRATE.

SPECIFICATION forming part of Letters Patent No. 358,555, dated March 1, 1887.

Application filed July 15, 1886. Serial No. 208,120. (No model.)

To all whom it may concern:

Be it known that we, RICHARD HUBBELL and FREDERICK REEDER HUBBELL, citizens of the United States, residing at Lake View, in the county of Cook and State of Illinois, have invented new and useful Improvements in Grates, of which the following is a specification.

Our invention relates to improvements in grates for stoves and furnaces; and it consists in certain peculiar and novel features of construction and arrangement, as will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a front elevation of a heating-furnace or stationary boiler provided with our improved grate. Fig. 2 is a vertical sectional view of the lower part of the furnace, showing the grate in longitudinal section. Fig. 3 is a plan view of the lower portion of the furnace. Fig. 4 is a front elevation of the furnace-doors closed; and Fig. 5 is a vertical transverse section of the ash-chamber, taken on the line *x x* of Fig. 2. Fig. 6 is a detail view of the support for the movable shaft.

Referring to the drawings by letter, A designates the casing of the furnace, composed of the usual or any preferred material, and preferably cylindrical. The base of the furnace is provided with openings *a* around its lower edge, through which the air is drawn in operation, whereby the draft necessary to maintain the fire is secured. Just above these openings, within the casing and supported by the same, is an open-work platform, B, upon which is mounted and supported the ash-chamber C. This ash-chamber C is approximately inverted U-shaped in cross-section, and upon the top thereof at its inner end, we erect a hopper or fire-pot, D, the upper end of which is just below the inner end of a chute, (not shown,) leading from the feed-door E. In the front end of the ash-chamber we provide, at the base of the furnace, a removable ash-pan, F, and the floor G of the ash-chamber is inclined toward said pan, so as to direct the ashes into the same.

H is the grate, made frusto-conical in form, and provided with the perforations *h*, arranged in longitudinal series, the perforations of one series being at right angles to those of the ad-

jacent series. The rear end of the grate, which is the closed end, is secured to a shaft, I, which extends longitudinally through the ash-chamber and passes through the rear end wall of the said chamber. The rear end of the grate is provided with perforations *h'*, which aid the perforations *h* in permitting the ashes and dust to pass to the ash-pan.

The rear end of the shaft I, as before stated, is supported by the rear or inner wall of the ash-chamber. The front end of this shaft is inserted through and supported by an eye, *j*, of a cross-bar, J, the ends of which are removably held in the sockets K in the mouth of the ash-chamber. The front end of said shaft extends out through the doors L, which close the ash-chamber, and are hinged to the casing of the furnace, as shown. These doors are held in their closed position by means of the latch-bar M, which is pivoted to one door and engages a keeper, N, on the other. The meeting edges of the doors L are provided with notches *l*, which, when the doors are closed, form a circular opening, through which the end of the shaft I projects, and beyond which it is provided with a crank-handle, *i*, by means of which it is operated.

It will be observed that the ash-pit lies immediately below the grate, and that the latter extends entirely across the mouth of the fire-pot. The length of the shaft I is such that the grate H may be pulled entirely out from beneath the opening of the hopper, and when so drawn out the grate permits the fuel contained in the fire-pot to fall upon the inclined floor of the ash-pit, from which it naturally passes to the ash-pan. The removable character of the support J enables us to entirely remove the grate for cleaning or repairs.

The grate operates with ease and rapidity, and is not apt to become clogged, as, when rotated, it grinds up clinkers, and thereby keeps the furnace or stove in good order. By providing the perforations in the grate arranged at right angles, as described, the efficiency of the grate is very much increased, for should a cinder fall upon the grate between two perforations of one series, and consequently be prevented from falling to the floor of the ash-pit, the rotation of the grate will bring the

next series of perforations in position to receive said cinders and allow them to pass through to the floor of the ash-chamber.

It is apparent that the draft will always be open, as the cinders and ashes will always pass to the ash-pan, and be prevented from accumulating beneath the grate, and consequently choking the same.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. An improved grate for stoves, furnaces, &c., consisting of a hollow perforated frame mounted upon a revoluble shaft arranged to slide longitudinally in the ash-chamber, substantially as described.

2. The combination, with the ash-chamber and the casing having doors L, of the hollow perforated revolving frame and longitudinally-movable shaft I, extending through the rear wall of the ash-chamber, and through the doors L, as set forth.

3. The combination, with the casing having doors L, of the ash-chamber having the hop-

per or fire-pot, and the longitudinally-movable shaft I, carrying the grate H, and extending through the rear wall of the ash-chamber, and through the doors L, as set forth.

4. The combination, with the casing having doors L, of the ash-chamber and the longitudinally-movable shaft I, carrying the grate H, and extending through the rear wall of the ash-chamber, and the support J for the shaft, and the sockets K for the support, as set forth.

5. In combination with the longitudinally-movable shaft I, carrying the grate, the support J, through which the shaft moves, said support being detachably mounted in place, as set forth.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in presence of two witnesses.

RICHARD HUBBELL.

FREDERICK REEDER HUBBELL.

Witnesses:

WILLIS G. FASKETT,

FRANK SCHLEGEL.