(No Model.)

R. Z. LIDDLE.

GRATE FOR STOVES.

No. 246,796. Patented Sept. 6, 1881.

Fig. 1.

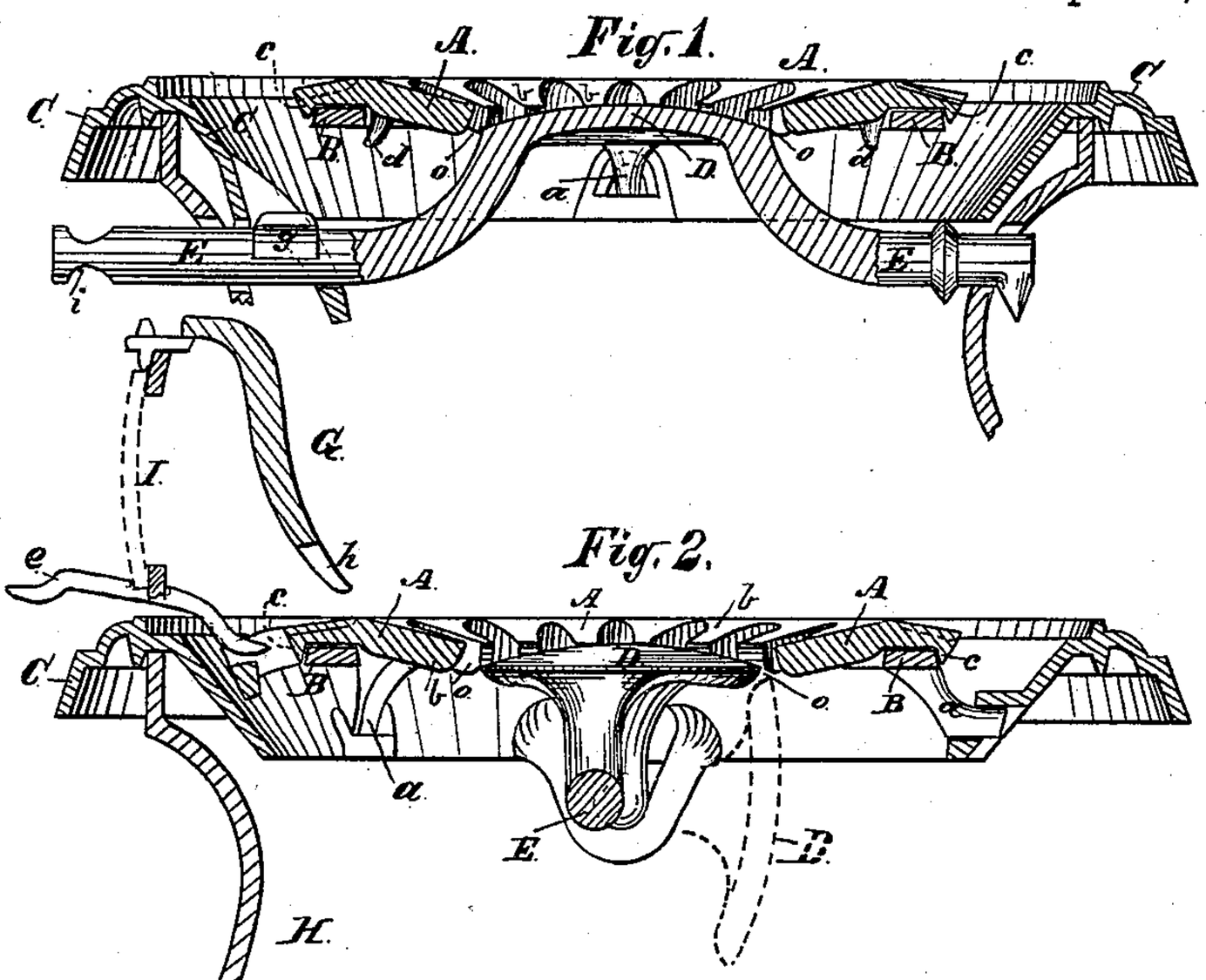
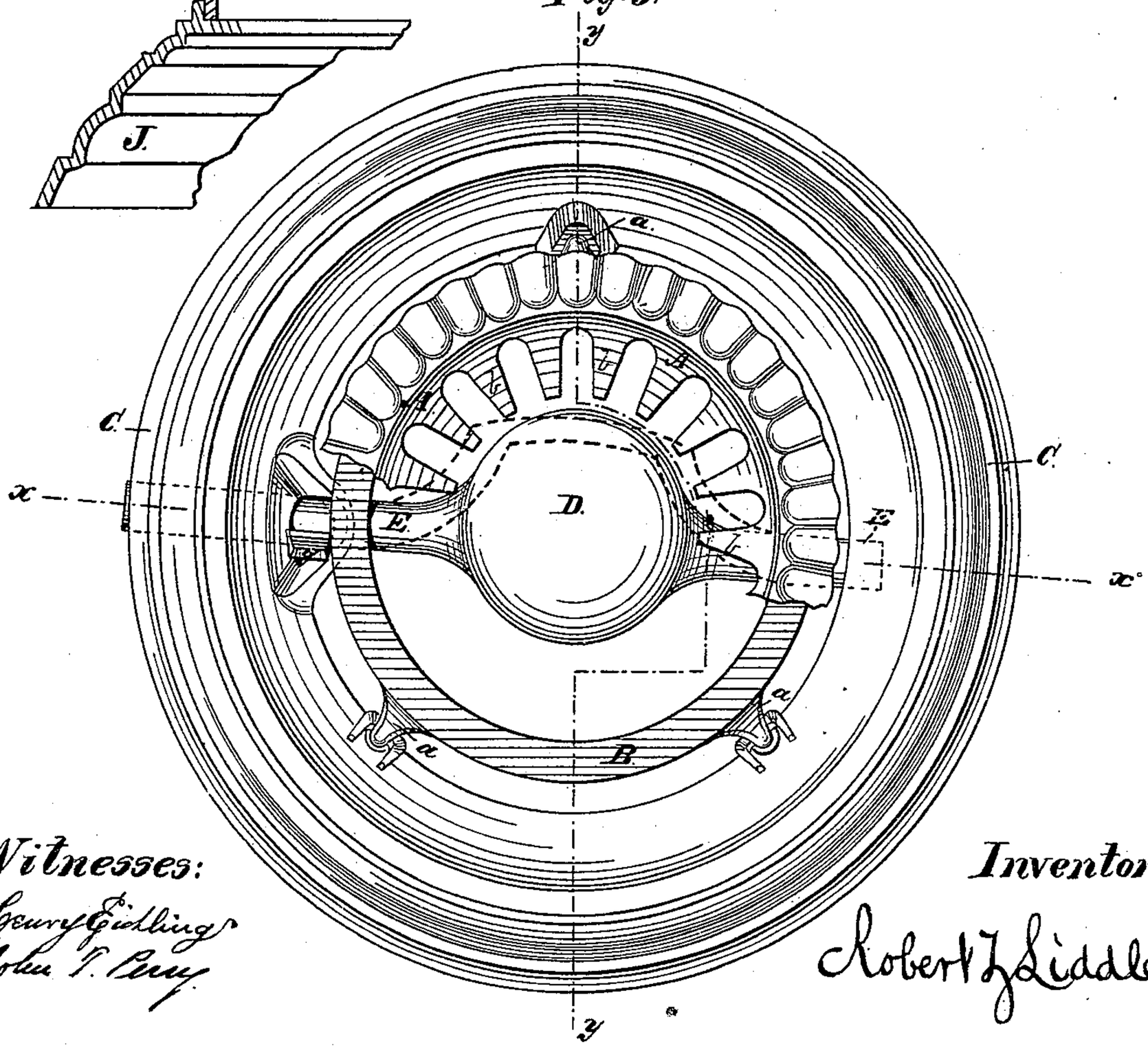


Fig. 2.

Fig. 3.



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GRATE FOR STOVES.

SPECIFICATION forming part of Letters Patent No. 246,796, dated September 6, 1881.

Application filed April 25, 1881. (No model.)

To all whom it may concern:

Be it known that I, ROBERT Z. LIDDLE, of the city of Albany, in the county of Albany and State of New York, have invented a new and useful Improvement in Grates for Stoves, of which the following is a specification.

It is the object of the present invention to perfectly remove clinkers, ashes, and other refuse or burned fuel from the central portion of the fire-pot of a stove, as well as from those portions adjacent the walls of the fire-pot and between its downward-projecting fingers, without the use of a poker or slicing-bar operated through an opening in the wall of the stove.

To accomplish the above-named object this invention provides two grates, or a grate and a disk, so constructed and arranged that they unite to support the burning fuel, and, by their movement in relation to each other and to the fire-pot, compel and permit the refuse to pass down into the ash-pit. One of these grates is arranged to be vibrated in a horizontal plane, and is provided with a central opening, while the other grate or disk is located beneath such central opening, and is arranged to be dropped or swung downward, so as to uncover the central opening and afford an unobstructed passage for the accumulated refuse in the central portion of the fire-pot.

The invention is illustrated in the accompanying drawings, in which Figure 1 is a sectional view of the grate, through the line *x x* of Fig. 3, when mounted in a stove. Fig. 2 is a sectional view of the same through the line *y y* of Fig. 3; and Fig. 3 is a plan view of the same, the upper grate being broken away to show its supporting ring or frame.

In the drawings, A represents a vibrating grate, which is supported upon a frame or ring, B, which, in turn, is supported upon the base-ring C of the stove.

The frame B may be secured to the base-ring C in any desired manner, as by legs *a a*, &c., projecting downward and outward from the frame B and entered into corresponding sockets or depressions formed in the base-ring C, which arrangement will prevent the frame B from turning while the grate A is vibrated upon it, and will also permit it to be readily removed whenever desired.

The grate A is provided with fingers *b b*, &c., extending around its inner periphery. The upper surface of this grate may be flat or of any desired configuration, but it is preferred to form it with a double incline or slope extending from about the center or middle of its width downward, both toward its inner and outer peripheries, the outer incline being preferably corrugated, as shown in the drawings. This grate is retained in position upon its frame or ring B by any convenient construction—as, for instance, by a slight annular flange, *c*, projecting downward from the outer edge of the grate, and a corresponding inner flange, or several projections, *d d*, &c.—the projecting parts forming an annular recess into which the frame B fits loosely, so as to permit the grate to be easily vibrated by means of a handle or shaker, *e*, operated through an opening in the wall of the stove.

D represents a drop or swing grate or disk, which is located beneath the central opening of the grate A, and is preferably of sufficient size to cover, or nearly cover, such opening. It is also preferred that the upper surface of this grate or disk should be crowning or somewhat spherical, so that the refuse thrown upon it from the inner periphery of the grate A will slide off from its edge. This grate D is connected to and operated by a shaft, E, which is conveniently journaled below the base-ring C, in the wall of the ash-pit section, or in hangers cast upon the base-ring. The shaft is attached to opposite points on the periphery of the grate or disk, it being so bent away from a straight line that when it is partially revolved it will drop or swing the grate away from the central opening above it, so as to leave an unobstructed passage from the fire-pot to the ash-pit, as shown by dotted lines in Fig. 2.

By the bending of the shaft on each side of its attachment to the grate, to accomplish the above purpose, it follows that these bent portions of the shaft will also, by its partial revolution, be swung from beneath the central opening.

The grate D and its shaft E are most economically cast in one piece, and, preferably, the attachments of the shaft to the grate are on one side of a line passing through the center of the grate, by which arrangement the greater weight of the grate on the dumping side of the shaft, and its less surface on the opposite side of the shaft, assists and permits it to be swung down or dumped with but little lifting action upon the superimposed fire-bed.

The grate D may be a solid disk or plate, or it may be provided with openings through it for the passage of air to the fire.

The shaft E is provided with a stop-projection, *g*, at one of its journal-bearings, which, by its contact with the wall of the bearing or some adjacent part, prevents the shaft from turning further than is desired, one-quarter of its revolution being sufficient to swing the grate D into the position shown in dotted lines in Fig. 2.

In Fig. 2, G represents a section of the fire-pot of a stove, *h* being one of a series of downwardly-projecting fingers.

I is the illuminated fire-pot section, H the ash-pit section, and J the base of the stove.

When the grate A is vibrated by the shaker the ashes and clinkers are moved by the double inclines on the surface of this grate both toward its outer and inner peripheries, the outer discharging over its edge into the ash-pit below, and the inner through the opening *o* between the grates A and D, or onto the edge of the grate D. During the vibration the corrugated surface of the grate A, near its outer edge, greatly facilitates the outward discharge by presenting a resisting surface to the falling ashes, &c., and compelling them to be moved with the vibration of the grate, and forcing them over its edge.

It is seen that the grate A is located directly under the fingers *h* and the wall of the fire-pot, and that the continued vibration of this grate will clear that portion, while the repeated dropping of the central grate, D, will remove all refuse which may accumulate in the central part of the fire-pot or be thrown upon this grate by the vibration of the grate A.

The shaft E is partially revolved to drop or swing the grate D by means of a removable crank or wrench attached to the end *i* of the shaft.

What is claimed as new is—

1. The combination, substantially as described, of a grate or disk provided with a bent shaft and a grate-ring, whereby the disk is swung from under the central opening of the grate-ring by means of the partial revolution of the shaft.

2. The combination of a grate or disk located beneath the central opening of the grate-ring of a stove and a shaft attached to the opposite edges of such grate or disk, but off from a line passing through its center, substantially as and for the purpose described.

3. A vibrating grate, A, provided with fingers projecting from its inner periphery, and having its upper surface inclined downward toward both its outer and inner peripheries, and having its outer inclined surface corrugated, substantially as and for the purpose described.

4. In combination with a vibrating grate, A, provided with projections *d d*, a stationary but removable ring or frame, B, substantially as and for the purpose described.

5. In combination with a vibrating grate provided with a central opening, a grate or disk located beneath such opening and attached to a shaft, substantially as described, whereby it can be swung from under such opening or returned to position by the partial revolution of the shaft, substantially as and for the purpose described.

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Witnesses:

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