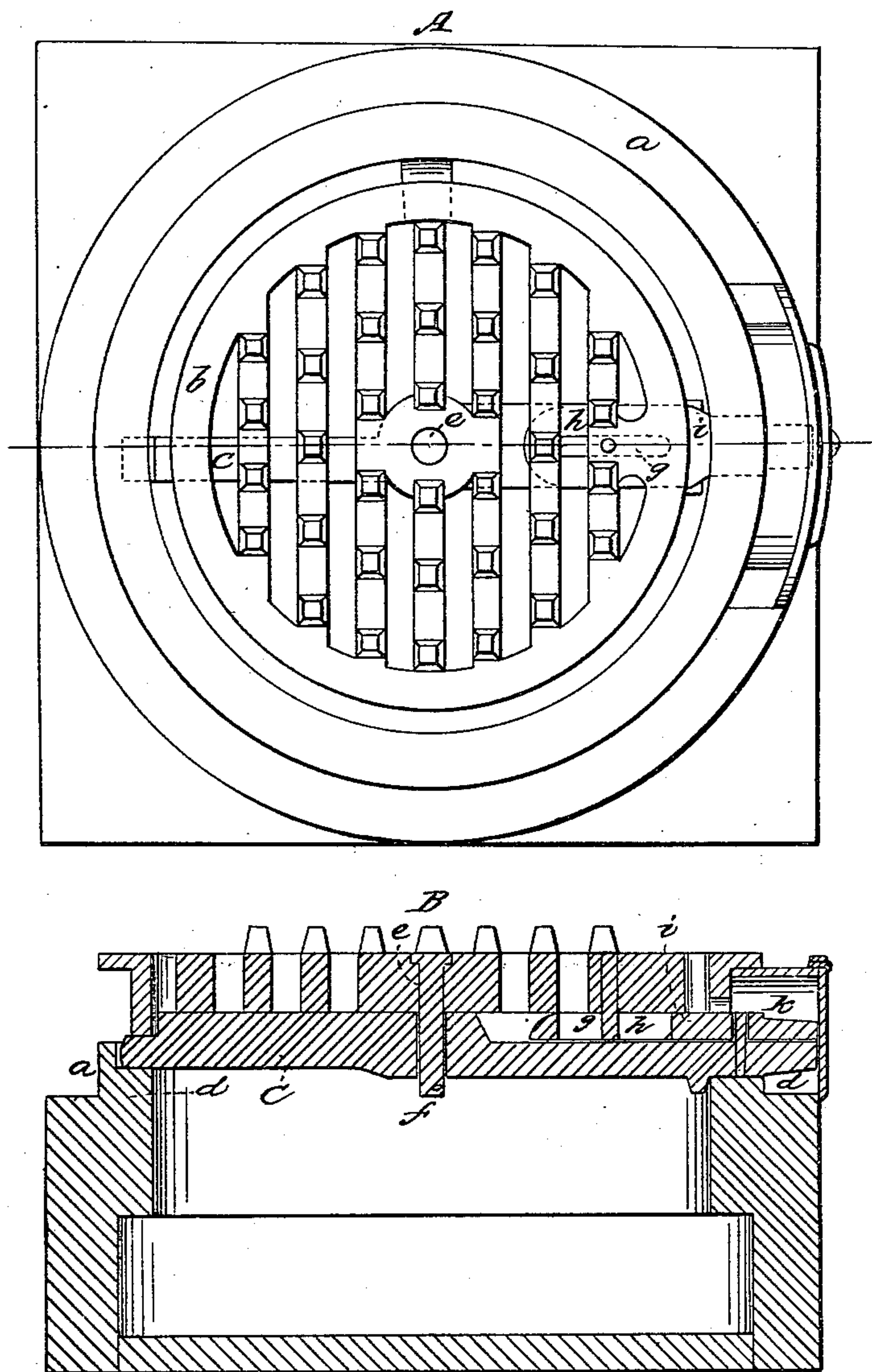


H. G. LEONARD.

Grate.

No. 64,430.

Patented May 7, 1867.



Witnesses:

J. B. Kilday,
W. W. Frothingham

Inventor:

H. G. Leonard by
Crosby & Gould Attys

United States Patent Office

HENRY G. LEONARD, OF TAUNTON, MASSACHUSETTS.

Letters Patent No. 64,430, dated May 7, 1867.

IMPROVEMENT IN GRATES FOR STOVES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, HENRY G. LEONARD, of Taunton, in the county of Bristol, and State of Massachusetts, have invented an Improvement in Grates for Stoves and Furnaces; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practise it.

The invention relates to the manner of hanging that class of grates for stoves and furnaces in which the grate is made to tip for the purpose of letting the contents of the fire-pot into the ash-pit, with reference to a provision for shaking or reciprocating such a grate horizontally for the purpose of sifting the ashes from the fire-pot into the ash-pit, the object of the invention being to give a greater range of reciprocative horizontal movement to the grate, so as to more effectually separate the ashes from the unconsumed coals.

The invention consists, in connection with mounting the grate to tip vertically on a cross-shaft or axis, and to rock horizontally on a vertical axis, of applying a horizontal lever to the cross-shaft or axis, which lever is fulcrumed outside of the grate, and receives a pin, extending from the grate into an oblong slot in the lever, so that by reciprocating the lever at the front of the furnace, its rear arm causes the grate to vibrate with a much greater extent of movement than can be obtained by projecting an arm directly from and fixed with reference to the grate, this shaking lever being so applied that it turns with and in no way impedes the tipping of the grate.

The drawings represent the base of a furnace with the grate thereto applied in accordance with my invention; A showing a plan, and B a vertical central section of the same. *a* denotes the base, ring, or flange upon which the fire-pot and furnace cylinder are supported. *b* the grate, the space below which constitutes the ash-pit. The grate is supported on a horizontal shaft or bar, *c*, turning in bearings *d*, one end of this shaft extending to the front or to the side of the stove, as seen at B, so that by applying a vertical lever to this end the grate may be tipped or swung over to let the contents of the fire-pot down into the ash-pit, as in other stoves or furnaces of this character. The grate is secured to the horizontal shaft *c* by a vertical axis or centre shaft, *e*, projecting from the grate, through a vertical bearing in the axis *c*, a pin, *f*, keeping the grate from movement away from the axis when the grate is tipped. This vertical shaft allows the grate to turn freely on the bar in a horizontal plane, as will be readily understood. Between the shaft *c* and the edge of the grate, in the line of the axis *e*, and towards the front end of said axis, a pin, *g*, projects down from the grate into an oblong slot, *h*, made through a lever, *i*. This lever *i* rests upon, and, so far as the tipping of the grate is concerned, forms part of, the axis *c*, but it is so applied to said axis that it may swing laterally with reference thereto a fulcrum-pin, *k*, connecting the arm and lever, as seen at B. The outer end of the lever is shown as forming with the end of the axis *c* the square head of the axis, to which the lever is applied by which the grate is tipped, while to the said end of the lever *i* a horizontal arm or extension of the lever may be applied to shake the grate horizontally, as will be readily understood, the connection of the lever to the axis *c* freely permitting both the shaking and tipping movements of the grate.

Now, in the common construction or arrangement of shaking and tipping grates, an arm projects directly from the grate (or from a ring concentric to and moving horizontally with the grate) through a horizontal slot formed in the front of the casting, in line with the grate, but this slot cannot be made of sufficient length to permit any considerable lateral movement of this arm without weakening the casting. Without a considerable movement of the grate, however, the coal and ashes cannot be sufficiently agitated to effect the separation of the ashes from the coal through the grate-bars. I therefore apply the lever *i*, fulcrumed near the front or side of the stove, and having a slot into which a pin projects from the grate, this pin being arranged at such distance from the edge of the grate towards its centre that the horizontal reciprocating movement of the lever gives to the pin (and thence to the grate) a much greater length of movement than the front end of the lever has, or than that part thereof has which projects through the slot in the side casting or plate of the furnace, this relative movement of the lever being effected without impairing the construction or arrangement of the axis upon which the grate tips.

I claim, in combination with a tipping and horizontally vibratory grate, the lever *i*, (into a slot in which a pin or projection from the grate works,) when this lever is applied to the cross-shaft or axis *c*, and operates the grate, substantially as set forth.

HENRY G. LEONARD.

Witnesses:

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