

J. F. QUIMBY.
STOVE AND FURNACE.

No. 173,057.

Patented Feb. 1, 1876.

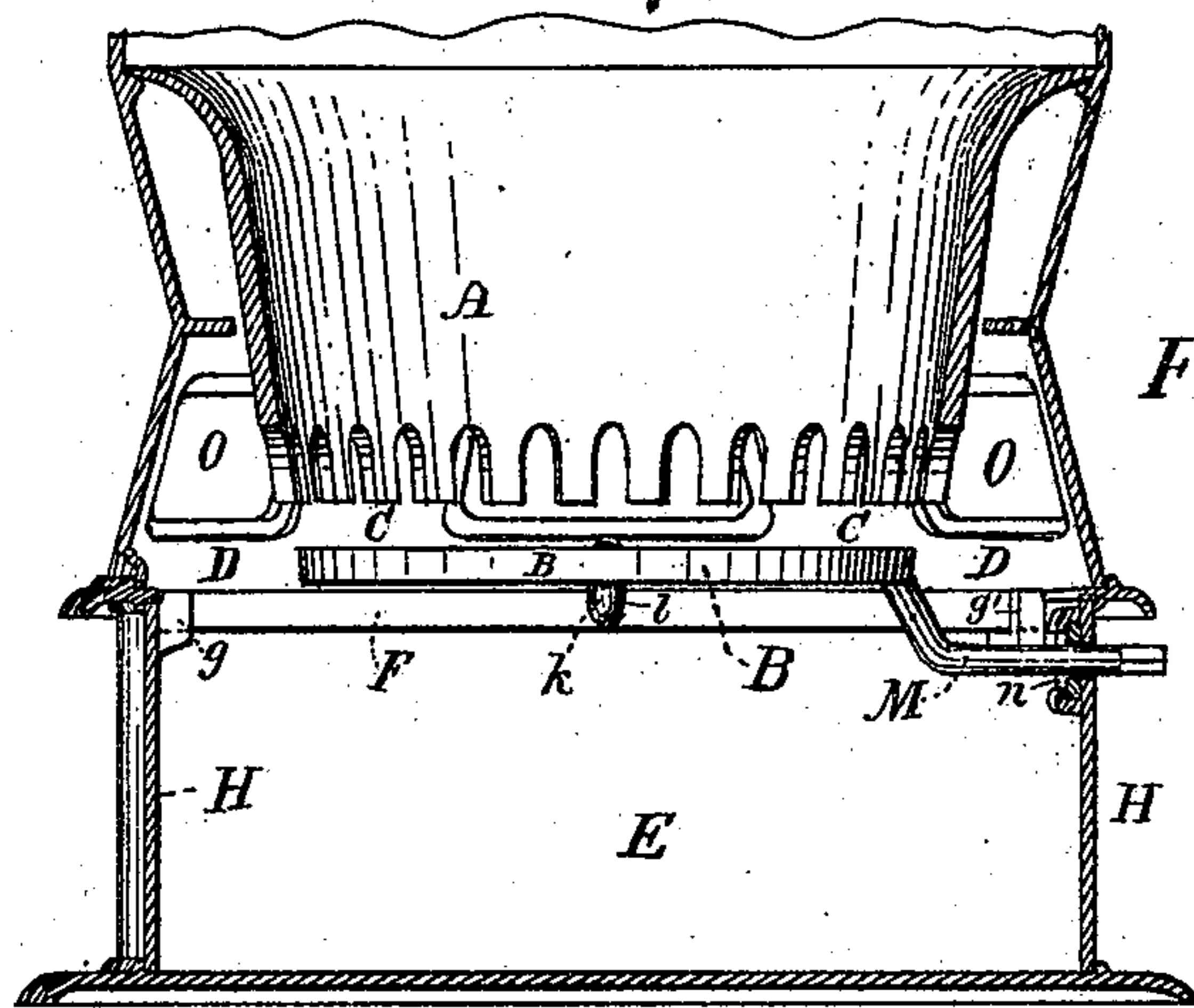


Fig. 1.

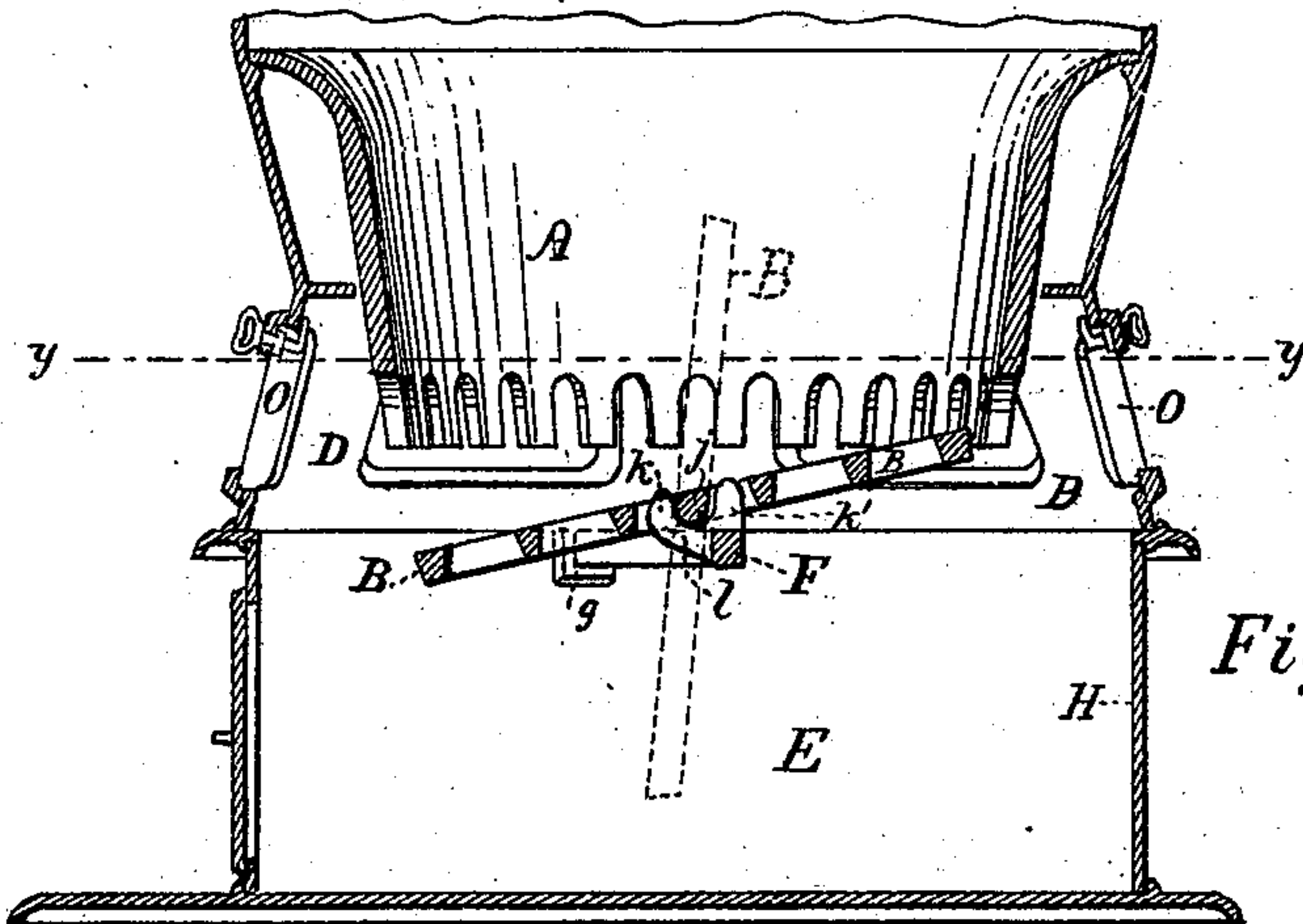


Fig. 2.

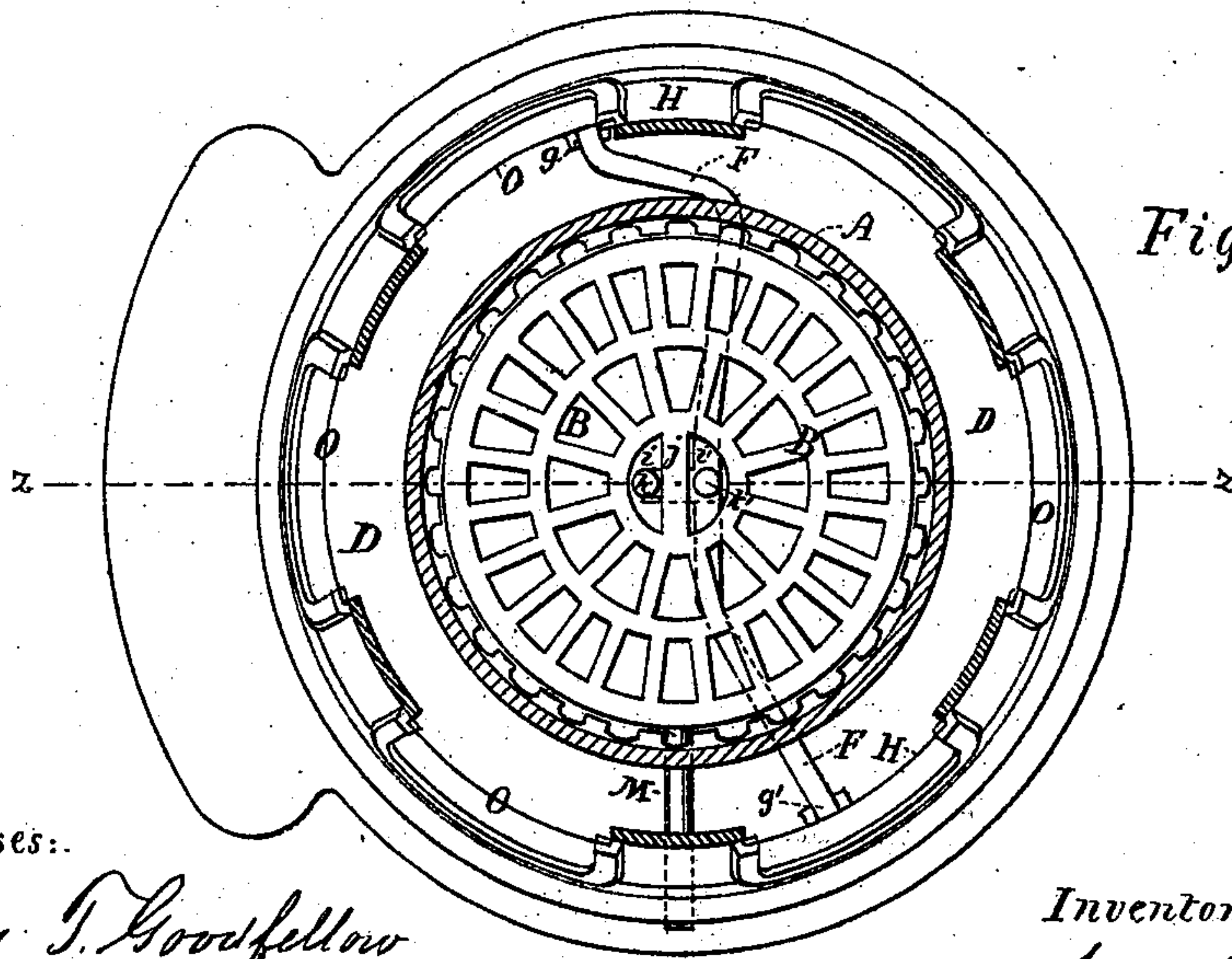


Fig. 3.

Witnesses:

James T. Goodfellow
Austin F. Park

Inventor:

Julius F. Quimby.

UNITED STATES PATENT OFFICE.

JULIUS F. QUIMBY, OF TROY, NEW YORK, ASSIGNOR TO SWETT, QUIMBY & PERRY, OF SAME PLACE.

IMPROVEMENT IN STOVES AND FURNACES.

Specification forming part of Letters Patent No. 173,057, dated February 1, 1876; application filed August 14, 1874.

To all whom it may concern:

Be it known that I, JULIUS F. QUIMBY, of the city of Troy, in the county of Rensselaer and State of New York, have invented a new and useful Improvement in Stoves and Furnaces, of which the following is a specification, reference being had to the accompanying drawing.

This invention consists of the combination, in a stove or furnace, of a fire-pot having its lower end open and horizontal, and a horizontally-vibrating and vertically-tilting grate no larger or somewhat smaller in diameter or area than the inner diameter or area of the lower end of the fire-pot, and mounted within an entirely surrounding air-draft chamber having a front door or doors in its casing, and at a distance from and directly below and parallel to the lower end of the fire-pot, and upon a support which is below the grate and isolated from the fire-pot, so as to form an entirely unobstructed and uniform lateral annular air-draft aperture, which extends all around and between the lower end of the fire-pot and the rim of the grate, and is sufficiently narrow to prevent the coal from escaping through it from the fire-pot, and yet wide enough to permit the small cinders as well as the ashes to be freely discharged laterally and equally through said annular aperture all around the grate upon vibrating the latter horizontally; and so that the grate is so small in diameter or area, in respect to the lower end of the fire-pot, that ashes and cinders cannot lodge or accumulate on the grate outside of the limit of the burning coal thereon, and thereby present an unsightly appearance, and obstruct the draft of air through the said annular aperture; and so that the whole grate can be turned into an inclined position upon its said support, so as to thereby temporarily make a larger opening between the grate and fire-pot at one side, through which enlarged opening the largest obstructing clinkers and slate can be removed without dumping the fuel from the grate; and so that the entire grate can also be tilted on its said support, so as to discharge the mass of ashes and cinders from the grate and fire-pot when the fire is suffered to die out.

In the aforesaid drawing, Figure 1 repre-

sents a vertical section of the hollow base-section and fire-pot, and an edge elevation of the horizontal grate, of a stove which embodies my aforesaid invention. Fig. 2 is a vertical section of the same at the line $z z$, Fig. 3, showing the grate inclined. Fig. 3 is a horizontal section of the same at, and plan of parts below, the line $y y$ in Fig. 2.

A is the fire-pot, having its lower end open, horizontal, and slotted or toothed; but the lower end of the fire-pot may be solid or without teeth or slots. B is a horizontally-vibrating and vertically-tilting ringless grate, which is somewhat smaller in diameter or area than the inner diameter or area of the lower end of the fire-pot, and is mounted parallel to, and at a short distance from and directly below, the lower end of the fire-pot, as shown in Fig. 1, so as to leave a uniform, annular, lateral, air-draft, and cinder-discharging aperture, C, all around and between the lower end of the fire-pot and the rim of the grate. I commonly mount the grate B so that the upper edge of its rim is about one inch from the lower end of the fire-pot A in stoves and furnaces for burning the ordinary "stove" and "nut" sizes of coal; but the annular aperture C may be of any suitable width, which shall prevent the coals from falling out, and also allow the cinders to be freely discharged through it while the grate is being vibrated horizontally. D is an air-chamber extending upward immediately and entirely around the grate B and lower part of the fire-pot from the ash-pit draft-chamber E. F is a support for the grate B, and it is, in turn, supported by its ends resting on lugs or in sockets $g g'$, cast on or in the inner wall of the casing H, and is so arranged as to support the grate in an isolated position, not only from the fire-pot, but also from the inner walls of the stove, in order to leave a free and unobstructed annular space, C, between the top of the grate and fire-pot, and also an air-chamber, D, between the grate and inner wall of the stove, and so arranged that the grate may be horizontally rotated, and vertically tilted in any desired direction. This bar or support F, starting from the lug g , is bent back nearly at right angles, extending to a point near the

edge of the grate on that side, when in a central position in the ash-pit chamber; thence, bending at nearly right angles, it extends in a direct line across the center of said chamber, and a little beyond the center thereof, then is bent back at an obtuse angle, and extends in a direct line to the lug g' , in which that end is secured. It will then be perceived that the general line of direction of this bar is diagonal to a line drawn centrally through the stove from the center of one side to the center of the other side, one of the ends of said bar F being in front of said line, the other end to the rear of it.

The central part of the grate B has two openings, $i\ i'$, separated by a short bar, j , and the support F has two projections, $k\ k'$, which extend upward on opposite sides of the bar j , and through the openings $i\ i'$, so as to keep the grate directly below and concentric with the lower end of the fire-pot, and permit the grate to be vibrated horizontally about its center. The projection k is united to the bar F by a lateral stem, l , so that the grate can be turned thereon into an inclined position within and below the fire-pot, as indicated in Fig. 2. An arm, M , is fast on the grate at a point at or near the center of one side of the same, and at a point in front of the end of the support-bar F , which is secured in the lug g' , and extends laterally therefrom through a slide, n , covering a slot in the casing H , so that by means of a suitable key applied to that arm outside of the casing, the grate can be vibrated horizontally about its center, and also inclined or tilted in a vertical plane.

It will be seen that from this construction of the bar F the grate B , which is an entire organism without supporting or inclosing rings, is capable not only of being vibrated horizontally within certain limits, but in a condition of rest is supported firmly against any inclination to tilt, by both the end of the bar F , turned to the rear, and the arm M , which then stands at an angle with such end of the bar; that when the arm M is moved toward the rear of the stove, and brought near to the end of the bar F , the crooked conformation of such bar will permit the grate to be tilted in a direction toward the back of the stove, and when said arm is moved toward the front of the stove, then the grate may be tilted vertically in that direction.

$O\ O$ are apertures, furnished with mica lights or doors, in the casing H , opposite, or nearly opposite, to the annular space C between the grate and fire-pot, and through which apertures the fire on the grate will be visible; and a poker can be inserted through the front or side apertures O and space C into the burning fuel, to remove obstructing clinkers and slate from the grate when the latter is inclined, as shown in full lines in Fig. 2.

I am aware that stoves have been heretofore made with a fire-pot having its lower end open and horizontal, and with a horizontally-vibrating grate of larger diameter than the

diameter of the lower end of the fire-pot, and mounted within an immediately-surrounding air-draft chamber or upward extension of the ash-pit, and at a distance below, concentric with, and parallel to the lower end of the fire-pot, and upon a support below the grate and isolated from the fire-pot, so as to form an entirely unobstructed annular air-draft and cinder-discharging aperture all around and between the lower end of the fire-pot and the upper surface of the grate; but my present invention is not embodied in any such stove or furnace which has a grate of larger diameter or area than the lower end of the fire-pot, or in which the whole grate-bed cannot be turned vertically into an inclined position inside of the fire-pot, or in which ashes and cinders will lodge and accumulate upon the outer portion of the grate outside of the fire-pot or limit of the burning fuel, and thereby present a very unsightly appearance, and obstruct the lateral draft of air to the fire through the uniform annular aperture between the lower end of the fire-pot and the grate.

I am also aware that stoves have been heretofore devised with a vertically-tilting, but not horizontally-vibrating, grate of smaller diameter than the inner diameter of the lower end of the fire-pot, and mounted at a distance from and directly below and parallel, or nearly so, to the lower end of the fire-pot, so as to leave a uniform annular draft-aperture all around and between the rim of the grate and the lower end of the fire-pot; but my aforesaid invention is not represented in any such stove in which the grate cannot be vibrated horizontally about its center, so as to thereby discharge ashes and cinders laterally therefrom through the annular aperture between and all around the lower end of the fire-pot and the rim of the grate; neither is my invention shown in any stove wherein a horizontally-vibrating or a tilting grate is supported at a distance below the fire-pot by lugs or arms extending downward from the fire-pot, so as to interrupt or obstruct the continuity of the lateral air-draft and cinder-discharging aperture between the grate and the lower end of the fire-pot.

What I claim as new and of my invention is—

1. In a heating stove or furnace, the combination of the following elements, viz: a fire-pot with a horizontal outline of bottom; a clear open space below all parts of the same; a grate-surface of a less diameter than the inside of the fire-pot; adapted for horizontal vibration for inclination in either direction, and suspended centrally below the fire-pot; a clear open space between the periphery of the grate-surface and the walls of the ash-pit chamber, and openings in the outer case of the stove to give free access to each part of the upper surface of the grate, substantially as and for the purposes set forth.

2. In a heating stove or furnace, the fixed supporting-bar F , constructed substantially

as described, extending diagonally across the ash-pit chamber, and secured in the walls thereof, said bar having the projections *k k'* wholly upon one side, for the purpose of permitting the grate mounted on said bar to be vibrated horizontally, inclined in various directions, and tilted vertically, substantially as explained.

3. In combination, in a heating stove or furnace, the lugs *g g'*, cast in or upon the inner walls of the ash-pit chamber, and adapted to receive and hold the ends of a fixed supporting-bar, the supporting-bar *F*, with ends secured in said lugs, and the grate-surface *B*, mounted upon said bar, entirely clear on all sides from the walls of the ash-pit chamber, substantially as and for the purposes set forth.

4. In combination, in a heating stove or furnace, the grate-surface *B*, with central openings *i i* and arm *M*, and the fixed supporting-bar *F*, extending diagonally across the ash-pit chamber, and secured in the walls thereof, said bar having the projections *k k'* adapted to enter said openings, substantially as and for the purposes set forth.

In testimony whereof I hereunto subscribe my name this 10th day of August, 1874.

JULIUS F. QUIMBY.

Witnesses:

JAMES T. GOODFELLOW,
AUSTIN F. PARK.