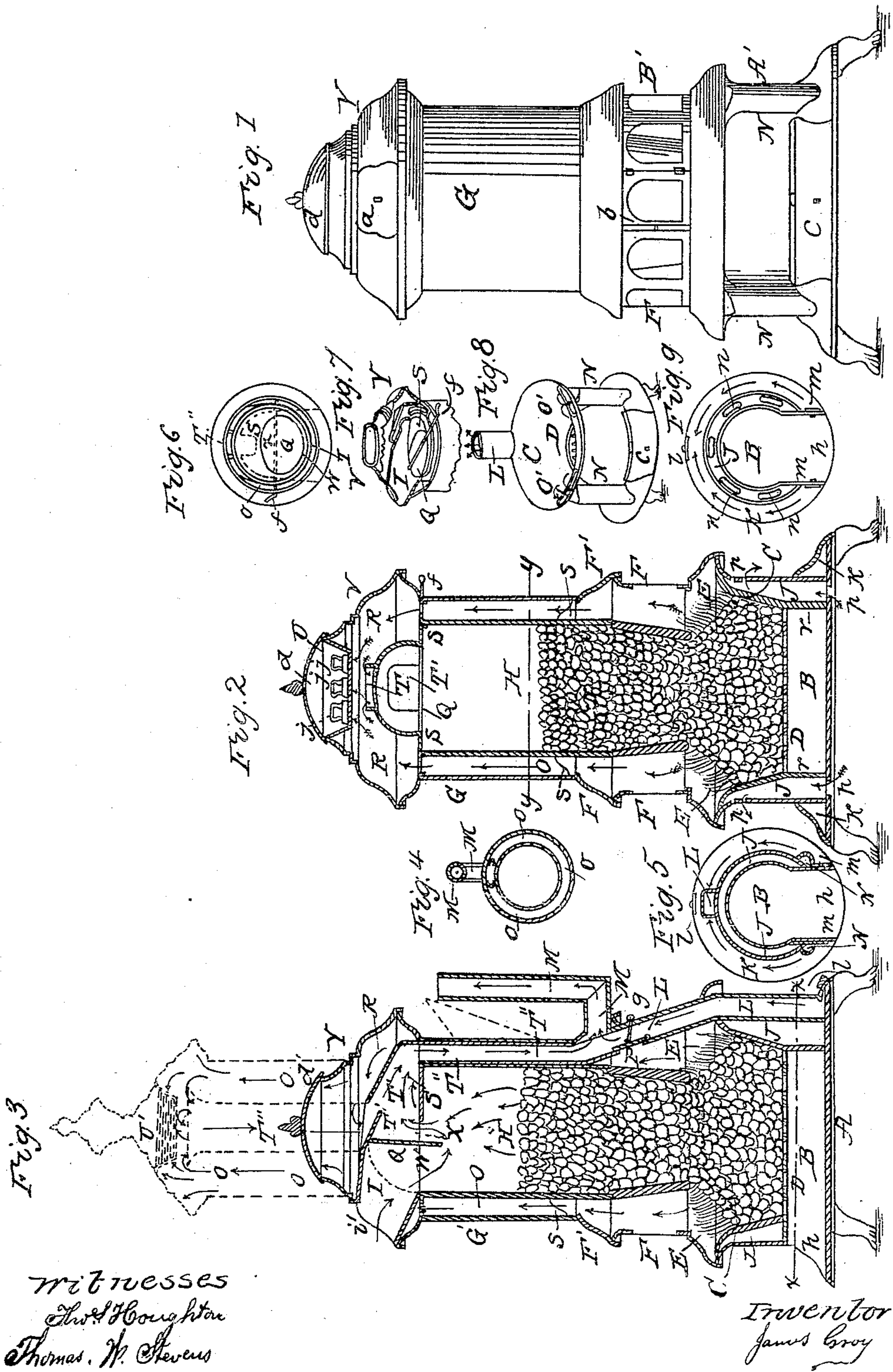


## Magazine Stove.

No. 84,109.

Patented Nov. 17, 1868.



witnesses  
 Geo. Houghton  
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# United States Patent Office.

JAMES GRAY, OF ALBANY, NEW YORK.

Letters Patent No. 84,109, dated November 17, 1868.

## MAGAZINE-STOVE.

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, JAMES GRAY, of Albany, in the county of Albany, and State of New York, have invented a new and improved Base-Burning Parlor-Stove; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of my invention.

Figure 2 is a vertical central section from side to side of the stove.

Figure 3 is a vertical central section from front to rear.

Figure 4 is a horizontal section, taken in the plane of red line *y y* in fig. 2.

Figure 5 is a section taken in the horizontal plane *x x* in fig. 3.

Figure 6 is a view of the under side of the stove-top.

Figure 7 is a perspective view of the stove-top, a portion of it being in section to show its interior construction.

Figure 8 is a perspective view of the fire-pot, with the outside descending flues leading to the base of the stove, and also an ascending flue at the back of the same.

Figure 9 is a plan of the base of the stove.

Similar letters of reference indicate corresponding parts in the several figures.

The principal object of my invention is so to construct a base-burning stove that it will diffuse an equal, continuous, and agreeable heat from its entire surface, not burning the air that comes in contact with one portion of its surface, and scarcely heating it at all in another, as many stoves of this class do. This object I attain by the construction of outside descending flues, leading from the combustion-chamber to the base of the stove, and in the front portion of the same.

Also, in the construction of an annular flue, nearly surrounding the lower portion or base of the stove, and acting in conjunction with the upper ascending flues, an upper chamber receiving the products of combustion, and a flue descending from the same.

Also in the construction of an imperforated air-chamber surrounding the fire-pot, and enclosing all of the ash-pit except the entrance to the same, as will be hereinafter more fully described.

Another object of my invention is to provide a means of easy access to the combustion-chamber of the stove, for the purpose of kindling a fire in the same, or to remove slag or other impurities from the fire. This object I accomplish by constructing illuminated doors or windows above the fire-pot, and opening into the combustion-chamber, as will be hereinafter described.

Another object of my invention is to provide in this class of stoves a means whereby a vessel may be heated

at the top of the same, for evaporation or other purposes, as will be hereinafter described.

Another object of my invention is to provide a simple and efficient means of producing a direct draught from the combustion-chamber, which I effect by connecting the same to the exit-flue *M* by means of a damper, *P*, in flue *L*, as will be hereinafter more fully described.

Another object of my invention is so to construct a damper, *Q*, between hooded chute or passage *I*, and coal-supply reservoir *H*, that, whenever necessary, a free communication may be established between them, and also at the same time with the descending flue *T*, so as to allow of the free escape of gas from the coal-reservoir *H*, through flue *T*, into exit-flue *M*, all of which is done without stopping or disarranging the draught of the fire.

To enable others skilled in the art to understand my invention, I will here describe its construction and mode of operation.

In the accompanying drawings, *A* represents the base-plate of the stove, upon which vertical plates *r* are secured, forming the ash-pit *B* of the stove. The annular smoke-flue *K* is formed upon this base-plate *A*, and also the bottom of the imperforate air-chamber *J*, in the manner shown in fig. 9.

On the top of the ash-pit *B* is placed the outwardly-flaring and trumpet-mouth-shaped fire-pot *C*, the bottom of which is a grate, *D*, constructed in the well-known manner.

The coal-reservoir *H* is supported free from the fire-pot by projections *S*, attached to it at points on a level with the top of ring *F'*, upon which they rest, as shown in figs. 2 and 3.

In the lower or base-section, *A'*, of the stove, and surrounding the ash-pit *B* and the fire-pot *C*, I form an imperforate chamber, *J*, by continuing the outer wall of the base-section *A'* to the base or bottom plate *A*, as shown in figs. 2 and 3, the top or brim of the fire-pot *C* forming the top of the air-chamber, as shown in figs. 2 and 3. Said chamber *J* may be made imperforate, as shown in fig. 3, which I prefer, or it may have openings *a* in its bottom, as shown in fig. 9, or it may be perforated near its top and in its bottom, as shown at *p p'* in fig. 2.

At the bottom of air-chamber *J*, and surrounding it, I construct an annular flue, *K*, which encircles the whole lower part of the stove, excepting the ash-pit opening *h*, as shown in figs. 5 and 9.

On the front part of the stove, at each side, and close to the opening *h* of the ash-pit *B*, I construct descending flues *N N*, which connect at their tops with openings or apertures *O'* in the brim of the fire-pot *C*, as shown in fig. 8, and passing thence on the outside of base-section *A'*, down into the annular smoke-flue *K*, at the bottom of the stove, as shown in figs. 1, 5, and 8.

At the back of the stove I provide an ascending flue, *L*, as shown in figs. 3, 5, and 8, its lower end



being connected with annular flue K, and its upper end leading into exit-flue M, as shown in fig. 3.

At a point in flue L, just below its junction with exit-flue M, is an opening, with a damper or valve, P, which is operated by a rod, *g*, which projects beyond the outer casing of the stove, as shown in fig. 3. Said damper P is to be used for producing a direct draught from the combustion-chamber E to the exit-flue M, as may be required to enliven the fire, or when kindling the same.

Above the fire-pot C, and below and around the lower end of the coal-reservoir H, is a continuous and unobstructed free space, forming the combustion-chamber E, as shown in figs. 2 and 3. The outer vertical wall F of combustion-chamber E constitutes the illuminated section B' of the stove, and has door or window-openings F, as shown in figs. 1, 2, and 3, extending nearly all around its circumference, as shown in fig. 1.

Said door or window-openings F are provided with doors or windows *b*, having mica lights therein, for purposes of illumination. Door-openings F will be found very useful when kindling the fire, or for the purpose of removing slag or other unconsumed products of combustion from the chamber E.

The space O O, shown in figs. 2, 3, 4, and 6, lying between the coal-reservoir H and the outer casing G of the stove, forms an upper ascending flue, and nearly surrounds the reservoir H, as shown in figs. 4 and 6.

The top of the coal-reservoir H is covered with a flat plate, S, which has in it an ovoid opening, W X, extending from the front of the coal-reservoir to a point a little beyond the centre of the same, as shown in figs. 3 and 6. Said ovoid opening is covered by a revolving damper, Q, of similar shape, as shown in figs. 6 and 7, and is operated by its rod *f*, shown in the same figures.

When the revolving damper Q is opened, it divides the ovoid opening beneath it into two separate and distinct openings, W and X, as shown in fig. 3, the one connecting with the feed-door *i*, and the other forming a gas-escape passage from the reservoir H to exit-flue M, as shown in fig. 3.

When damper Q is turned up, as shown in fig. 3, its top and sides fit closely into hooded chute I, so that no coal can pass beyond it into back descending flue T, neither can any gas escape from the reservoir into the room when the door *i* is open. By means of revolving damper Q, the communication between door *i* and reservoir H may be established or cut off at pleasure.

On the top of the reservoir H, I construct a hooded chute, I, having an opening, *i*, in its front, and an opening, T', in its rear, and an opening, T, in its top.

The opening *i* is covered by a door, and is used for the introduction of fuel to the coal-supply magazine H. The opening T', in the back part of hooded chute I, is for the escape of gas from the reservoir, and the opening T, in the top of the hooded chute I, is for the admission of the products of combustion arising from flue O, all of which must pass into hooded chute I, through opening T, in the top of the same, before they enter the back descending flue T' and exit-flue M.

By this construction of hooded chute I, with an opening, T, in its top, the heated products of combustion arising from flue O, are united near the centre of the top of the stove, where an opening, V, is provided, into which an evaporating-pan may be placed, as shown in figs. 7 and 3.

Having described the construction of the stove, I will now briefly describe the operation of the same.

The fire is started upon the grate through one of the illuminated doors *b*, the damper P, in the back flue L, having been previously opened to form a direct draught. When the fire is well lighted, the damper P must be closed, and remain so, unless it be necessary

to produce a temporary increase of heat by hastening the combustion of the fuel, which may be accomplished by allowing the damper P to remain open for a short time.

Before coal is supplied to the reservoir H, the revolving damper Q must be opened, as shown in fig. 3.

When the passage *i*, leading to hooded chute I, is opened, the revolving damper Q having been previously opened, as shown in fig. 3, the current of cold air entering the hooded chute I, will take the course indicated by blue arrows in the same figure, and the unconsumed gases rising from the reservoir H, will course with the entering air up through aperture X, and into back descending flue T', into exit-flue M, without changing the draught of the stove, as shown in fig. 3.

By my invention the whole exterior of the stove will be uniformly heated; the base of the stove by means of descending flues N N, the annular base-flue K, and ascending flue L, and the upper part by flues O and T', and the top by chamber R, all acting in conjunction. Thus the heat is diffused equally to all parts of its surface, from the top to the bottom, and at one and the same time, and an agreeable degree of warmth is produced over its entire surface, and all this with a very moderate consumption of the supply of fuel, while all that portion of the heated products that pass up through flue O and chamber R are brought in direct contact, and made to impinge the sides and bottom of the vessel U, before they can enter into the opening T in the top of hooded chute I.

By the construction and arrangement of the imperforated air-chamber J, surrounding and enclosing both the fire-pot C and the ash-pit B, as seen in fig. 3, I am enabled to neutralize the excessive heat of the fire-pot C. As no circulating current of air can act on its surface the fire may be kept in longer, and the combustion of the fuel will be much facilitated for the radiant heat of the fire-pot will not be so rapidly extracted as it would be without the employment of said imperforated air-chamber J.

I do not claim broadly, in base-burning stoves, a continuous expansion or combustion-chamber, nor do I claim a reservoir with a contracted outlet, and suspended above the fire-pot.

Having described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. In a base-burning stove, having a fuel-magazine suspended free from the grate, and having an unobstructed free space around and below it, and having an illuminated casing surrounding the same, the construction of descending flues N N, passing from the brim of the fire-pot C, and outside the base, A', and near the front of the stove, into annular flue K, in combination with ascending flues L and O, chamber R, and descending flue T', substantially as shown and described.

2. The construction of hooded chute I, with a flue-opening T upon the top thereof, for the purpose of causing the products of combustion from flue O to pass through the said hooded chute on their passage to exit-flue M, substantially as and for the purpose set forth.

3. The combination of the intermediate air-chamber J, the descending flues N N, the annular flue K, and the ascending flue L, substantially as shown and described.

4. The combination of the combustion-chamber E, flue O, and hooded chute I, with its top flue-opening T, substantially as herein set forth.

5. The revolving cover or valve Q, in combination with the coal-reservoir H, and the hooded chute I, substantially as and for the purposes herein set forth.

6. In a coal-stove or furnace, having a depressed fire-pot, and a supplying-reservoir sustained free from



the grate and fire-pot, and so arranged that the inflamed gases may burn in a free space, so constructing and arranging such stove or furnace, that a portion of the products of combustion arising from the fire will be conducted up, around, and above the reservoir H and hooded chute I to the top of the stove, and at the same time another portion of said products of combustion will be carried down outside the fire-pot

C, to and around the bottom of the stove, thereby producing an equal degree of heat over the entire surface of the stove, substantially in the manner herein described.

JAMES GRAY.

Witnesses:

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WM. GRAY.