2 Sheets—Sheet 1.

G. H. JOHNSON.

BASE-HEATING STOVE.

No. 181,942. Patented Sept. 5, 1876.

Fig. 1.

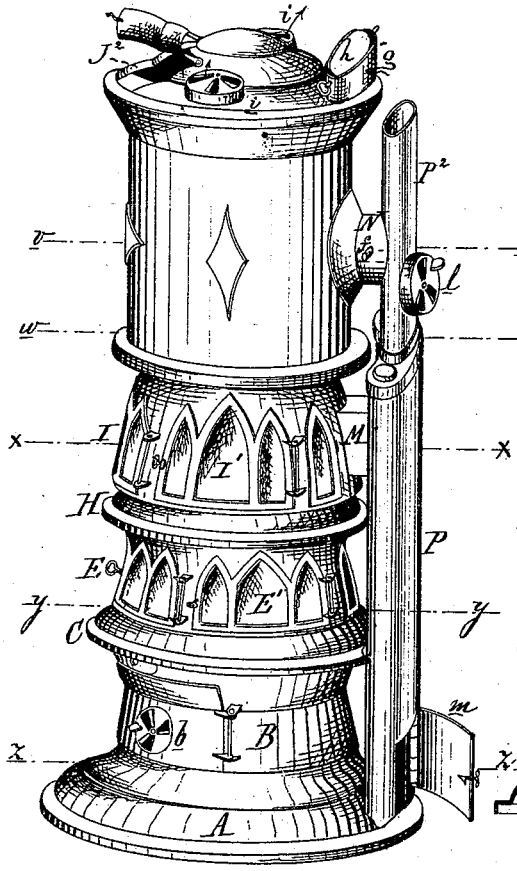


Fig. 2.

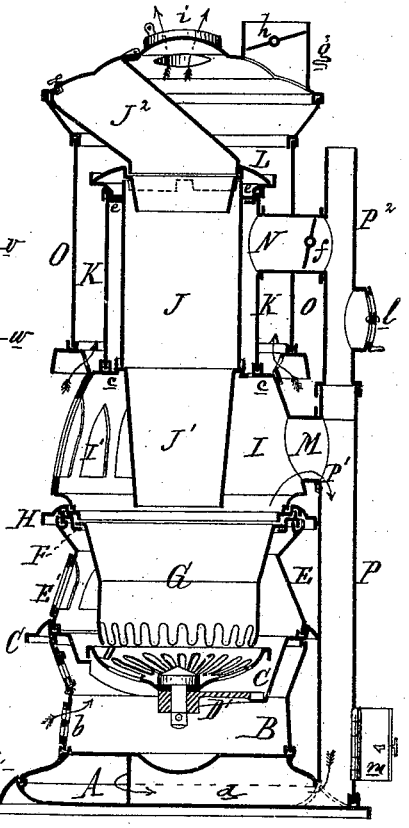
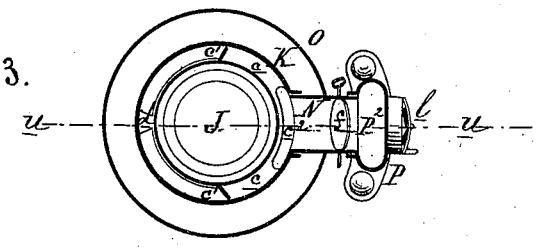


Fig. 3.



Witnesses:
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2 Sheets—Sheet 2.

G. H. JOHNSON.

BASE-HEATING STOVE.

No. 181,942. Patented Sept. 5, 1876.

Fig. 4.

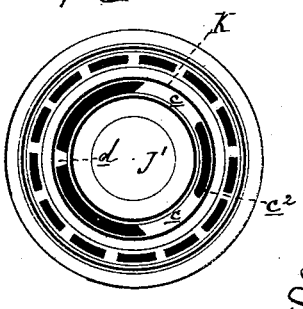


Fig. 5.

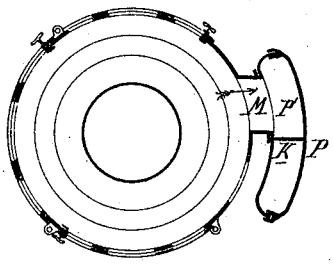


Fig. 6.

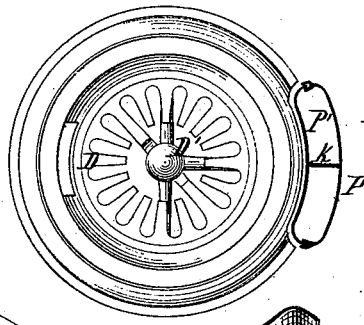


Fig. 10.

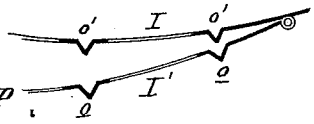


Fig. 7.

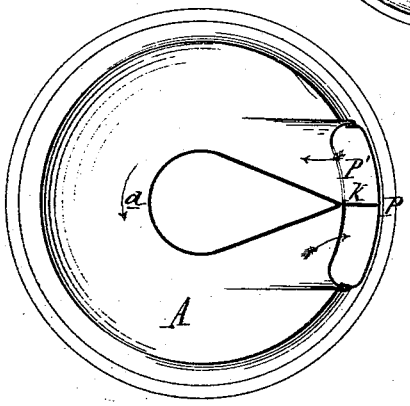


Fig. 9.

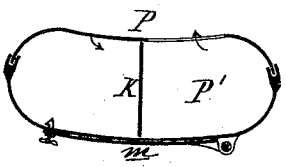
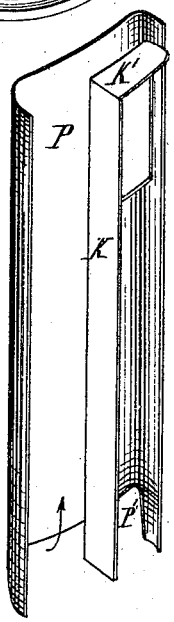


Fig. 8.



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UNITED STATES PATENT OFFICE.

GROVE H. JOHNSON, OF ERIE, PENNSYLVANIA.

IMPROVEMENT IN BASE-HEATING STOVES.

Specification forming part of Letters Patent No. **181,942**, dated September 5, 1876; application filed January 7, 1876.

To all whom it may concern:

Be it known that I, GROVE H. JOHNSON, of Erie, in the county of Erie and State of Pennsylvania, have invented certain Improvements in Base-Heating Stoves, of which the following is a specification:

My invention has relation to certain improvements in base-heating magazine-stoves; and consists, first, in the combination of the ascending and descending flues with a revertible exit-flue issuing from the combustion-chamber, and an exit-flue issuing from the magazine-casing proper, the latter being incased in a jacket or air-chamber, up through which air-currents pass and are heated by contact with the magazine-casing; also, in placing an air-register between the direct-draft exit-flue and the revertible-draft exit-flue; also, in the combination of a stop-plate and flue-strips with the magazine, its casing, and exit-flue, all as more fully hereinafter described.

Figure 1, Sheet 1, is a perspective view of my stove. Fig. 2 is a vertical section, at *u u*. Fig. 3 is a horizontal section, at *v v* in Fig. 1. Fig. 4, Sheet 2, is a similar section, at *w w*. Fig. 5 is a similar section, at *x x*. Fig. 6 is a similar section, at *y y*. Fig. 7 is a similar section, at *z z*. Fig. 8 is a sectional perspective view of the back-flue from the inner side. Fig. 9 is a horizontal section of the same, at the plane *z z*. Fig. 10 is an enlarged horizontal section of one of the mica windows and a portion of the combustion-chamber section, at the plane *x x*.

In the drawings, A represents a circular base-plate and chamber, in which there is placed a pear-shaped flue-strip, *a*, around which the heated currents must flow when the draft is reverted. B is the ash-pit section, provided with the usual ash-doors and draft-registers *b*. C is a grate-ring, sitting on the top of the ash-pit section, and is cast with a contracted pendent flange on the inside, to serve as an ash-chute. D is a rotating and tilting grate, vibrating on a three-armed spider, D′, which is supported by three lugs cast on the lower edge of the ash-chute flange, at the sides and back thereof. E is the fire-pot section, which rests on the ring C, and, being provided with a row of mica doors, E′, is usually termed the lower illuminating-section. F is a fire-pot ring, resting on the section E, and is cast with a flange in its inner periphery, to receive the flange of the fire-pot G, which is thereby suspended. The upper half of the fire-pot flares outwardly, while the lower half is straight, and is slotted or fingered, as shown. H is a flanged ring, which sits on the ring F, having a flange cast on the inner periphery, to come down over the inner edge of said ring F, a rabbet on top, and a pendent flange on the outer periphery. I is the combustion-chamber section, which sits on the ring H, and, being provided with a row of mica doors, I′, is usually called the upper illuminating-section, in stoves of this class. At the back there is an exit-flue, M.

The top of the section I is flanged inwardly and upwardly, and the rear half is cast with a horizontal segment-shaped stop, *c*, on which rests a portion of the flange of the contracted mouth J^1 of a magazine, J, the front part of said flange resting upon a lug, *d*, cast on the front part of the section-ring, whereby said mouth J^1 is suspended over the fire-pot. K is a casing which incloses the magazine J, and rests upon the flange-ring of the section I. The magazine proper J is suspended within this casing or section by two lugs, *e*, Fig. 2, at the top, while its lower end rests within the flange of the ring at the top of its mouth-piece below. From the ends of the stop *c* two flue-strips, *c′*, Fig. 3, rise, one at each side of the magazine, nearly to the top thereof, between it and its casing. L is an annular cover, which covers the space between the magazine and its casing. J^2 is a chute, provided with a door, through which the magazine is charged with fuel.

At the back of the magazine-casing there is an exit-flue, N, provided with a damper, *f*. As the heated currents rise from the fuel in combustion, they are arrested by the stop *c*, and compelled to pass up between the front part of the magazine and its casing in front of the flue-strips *c′*; thence over the latter and downward behind them before they can enter the exit-flue N, when the direct-draft damper *f* is open, whereby the casing is heated and made available to radiate heat.

To render the stove capable of heating one

or more apartments of an upper floor, or to make it what is known to the trade as a double-heater, I inclose the magazine-section and the entire top of the stove with an air-chamber, O, closed at the top by an enlarged ornamental cap, of which the door of the fuel-chute forms a part. At the back part of the cap there is a collar, *g*, for a hot-air flue, leading through to an upper room, and is fitted with a damper, *h*, to shut off the ascending current of heated air, when desired, in which case it escapes through the registers *i i* into the apartment in which the stove is placed.

P is a wide oval back flue rising from the base-chamber to a point above the exit-flue M, where it is closed by a cap. Within this flue a diving-flue, P^1, is formed at one side by a flue-strip, *k*, and cap-strip *k'*, which include the mouth of said exit-flue M, so that when the direct-draft damper *f* is closed, the gaseous products of combustion must pass through the exit-flue N into and down through the diving-flue P^1, around the flue-strip in the base-chamber, and thence up through the back flue N and a continuation thereof, P^2, which is slipped over a collar about an opening in the cap of the flue P. The exit-flue N enters this flue P^2, but between the exit-flues M N a check-register, *l*, is located, and serves to check and regulate the draft, whether it be direct or reverted.

At the lower end of the back flue there is a door, *m*, which gives access to the base-chamber for the removal of dust or ashes deposited therein.

The air-chamber O rests upon a double-flanged or inverted channel-ring, O', which is sleeved on the top of the upper illuminating-section. The inner flange of said ring is perforated for the admission of air, as indicated by the arrows in Fig. 2, to the interior of the said chamber, the perforations being hidden by the outer flange.

In order to allow the heated products of combustion to come into contact with the back half of the magazine-section when the direct-draft damper is closed, a small segment-shaped opening, c^2, is cut in the stop *c*, which opening is much too small to pass the heated gases when the said damper is open, compelling the larger volume to pass around in front of and over the flue-strips, but yet large enough to keep the rear part of the magazine-casing heated when said damper is closed.

It is conceded by all conversant with the subject that, for economy in the consumption of fuel, a properly-designed revertible-draft base-heating stove is unequaled, and that the only objection to its use arises from defective or leaky joints. Such a stove with imperfect or leaky joints, if connected with a chimney having a weak draft, will at times pour out poisonous gases to vitiate the atmosphere, to the detriment of the health of those who breathe it, while, if connected with a chimney having a strong draft, the combustion cannot be properly controlled, as air enough will leak into the stove, with all draft shut off, to enable combustion to proceed rapidly, and thus waste fuel.

To construct a stove that is free from these objections is one of the objects of the present invention, and to this end all joints between the various sections and rings, mica doors and rings, fire-pot and its ring, and, in fact, at all points where air might enter or gases might leak out of the stove, (save the exit,) I make pocket-joints—that is to say, a V-shaped projection on the one received in a corresponding depression in the other, shown in detail in Fig. 10, where such depressions are shown at *o* in a mica door, closing over corresponding projections *o'* on the upper mica-section—such joints being practically air-tight when drawn together by the turn-buckle of the door.

In making the permanent joints, while mounting the stove, the depressions referred to may be filled with the usual stove cement or putty before inserting the V-shaped projections.

What I claim as my invention is—

1. In combination, in a heating-stove, a direct-draft flue, leading out of the upper part of the magazine-chamber, a damper in said flue, an extension, P^2, of the revertible flue, and an air-register in the same, substantially as described.

2. In a heating-stove, substantially as described, the combination, with the back flue, of an air-register, located between the direct-draft exit-flue and the revertible-draft exit-flue connected with said back flue, substantially as described.

3. The top plate *c*, having the opening c^2 and the flue-strips c^1 c^1, in combination with the magazine, magazine-casing, and exit-flue N, substantially as described.

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