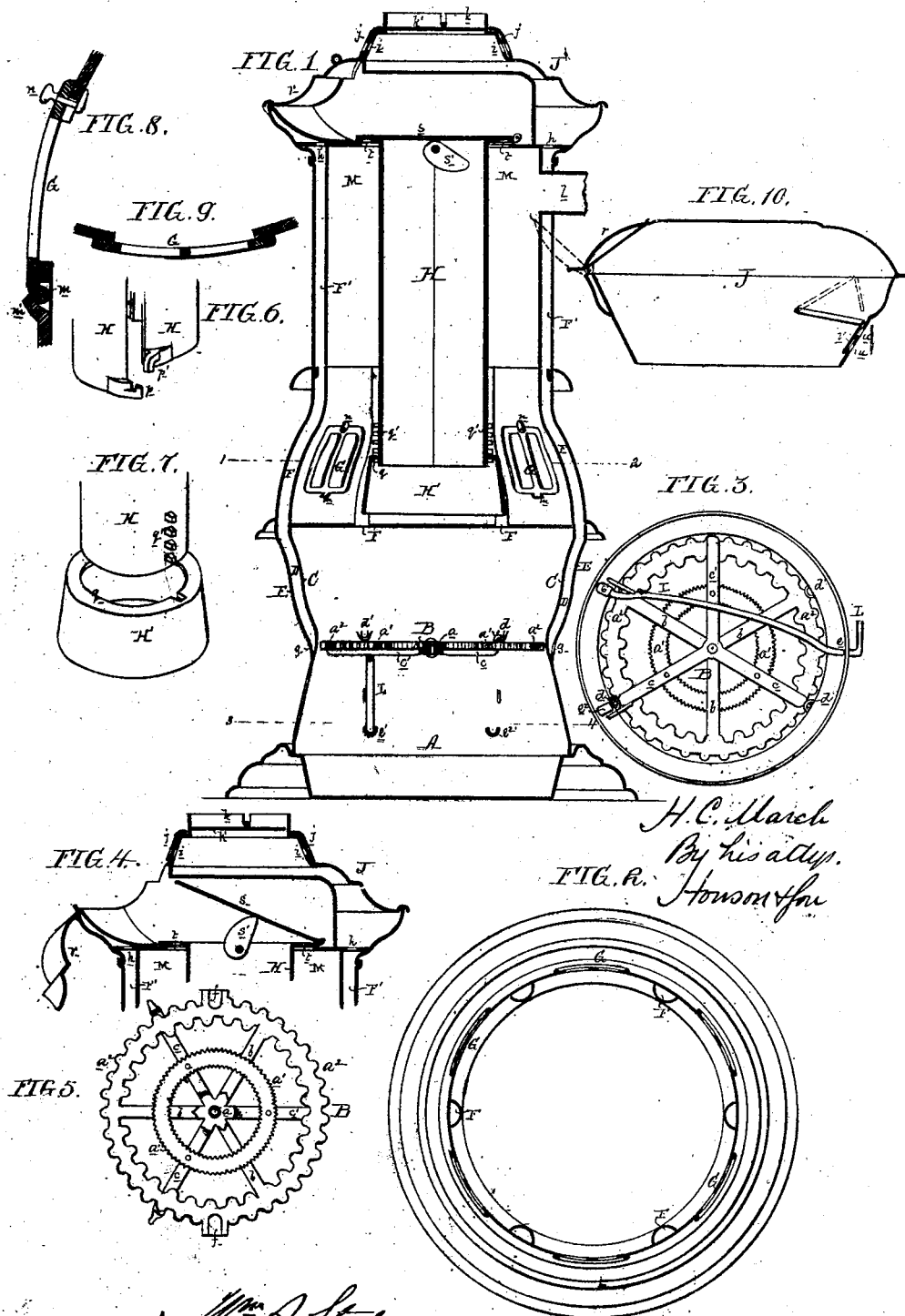


H. C. MARCH.  
BASE BURNING STOVE.



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WITNESSES { *Wm. A. Steel*  
*John Parker*

# United States Patent Office.

HENRY C. MARCH, OF LIMERICK STATION, PENNSYLVANIA.

Letters Patent No. 110,258, dated December 20, 1870.

## IMPROVEMENT IN BASE-BURNING STOVES.

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

I, HENRY C. MARCH, of Limerick Station, county of Montgomery, State of Pennsylvania, have invented an Improved Base-burning Stove, of which the following is a specification.

### *Nature and Object of the Invention.*

My invention consists of certain improvements fully described hereafter in base-burning stoves, the improvements being such that a thorough consumption and radiation of heat are obtained, while the accumulation of clinkers upon the grate and escape of gas and smoke from the the upper part of the stove are avoided.

The improvements are also such that the parts most liable to burn out, namely, the grate and lower portion of the reservoir, can be readily detached and replaced by others without taking the stove apart or requiring the services of a skilled workman.

### *Description of the Accompanying Drawing.*

Figure 1 is a vertical sectional view of my improved base-burning stove;

Figure 2, a sectional plan view of the same on the line 1 2, fig. 1.

Figure 3, an inverted sectional plan on the line 3 4, fig. 1.

Figure 4, a view of the top of the stove in a different position from that shown in fig. 1;

Figure 5, a plan view of the grate;

Figures 6 and 7, perspective views of the reservoir or feeder;

Figures 8 and 9, sectional views of one of the mica doors of the stove; and

Figure 10, a view of a modification.

### *General Description.*

A represents the base of the stove;

B, the grate;

C, the fire-pot;

D, an annular chamber between the fire-pot and outer casing E;

F, tubes forming a communication between the chamber D and an upper chamber, F', and arranged between the mica doors G; while

H represents the reservoir or feeder; and

J, the top of the stove.

The grate B is of the peculiar character best observed in figs. 1, 3, and 5, and consists of a central portion, *a*, and of two serrated or corrugated rings, *a'* and *a''*.

The central portion *a* and outer ring *a''* are connected together by arms, *b*, and are pivoted at the center to a frame consisting of three radiating arms, *c*, *c'*, and *c''*, to which the ring *a'* is fixed.

The arms *c* have at their outer ends lugs or fingers adapted to eyes or staples, *d*, at the back of the stove

or to corresponding eyes or staples, *d'*, at the front of the stove, so that the grate can be hinged to drop either front or back, as desired.

The grate is supported in a horizontal position by means of a curved rod or arm, L, similar to that described in my patent of September 28, 1869, the outer end of which turns in a bearing, *e*, and its inner end in a recessed lug, *e'*, if the grate is hinged at the back of the stove, or in a similar lug, *e''*, if the grate is hinged at the front of the stove.

The grate may be raked by means of a suitable instrument adapted to one of the recesses, *f*, of the outer ring *a''*, the latter as well as the central portion *a* being agitated while the intermediate ring *a'* remains fixed, so that when the fire is raked all clinkers, &c., will become broken up by the serrations or teeth of the grate and will fall through the latter into the ash-pit.

When a fire is kindled upon the grate, cold air enters the apertures *g* at the bottom of the chamber D surrounding the fire-pot, and, while maintaining the latter in a comparatively cool state, becomes itself heated, and passes upward through the tubes F, between the mica doors, into the upper hot-air chamber F', whence it passes through openings *h* into the top of the stove, and is thence distributed into the room through the openings *i*, if the annular valve *j* be left open, or passes through the pipe *k* into an upper apartment, if the damper *k'* be opened, and the valve *j* closed.

It will thus be seen that while a constant upward current of heated air is produced there will also be a considerable radiation of heat into the room as the hot-air chambers and conducting-tubes are situated immediately within the outer casing of the stove.

The smoke, heated gases, &c., pass upward into the chamber M surrounding the reservoir, and escape finally through the outlet-flue *l* into the chimney.

The mica doors G have several peculiarities: They are curved both vertically and horizontally instead of being perfectly straight, in order that they may fit closely to the curved surface of the casing to which they are attached, and, instead of being hinged, as usual, by means of a rivet passing through drilled holes, have a central lug, *m*, at their lower ends, adapted to a recess and inclined lug, *m'*, of the casing.

This is cheaper than the usual method of hinging; enables the doors to be readily detached, and forms also a much closer joint, as the inclined lug *m'* adjusts the door up to the casing, (see fig. 8.)

The doors, when closed, may be fastened by a button, *n*, or other device.

The reservoir H is formed in two sections, but these sections, instead of being riveted or pinned together, are connected by means of the locking lugs *p p'* in the manner clearly shown in fig. 6.

The lower or supplementary reservoir *H'* is similar to that described in my patent of September 28, 1869, but is in the present instance cast solid instead of in two sections, and in place of the lugs adapted to a screw-thread on the reservoir proper it has a flange, *q*, adapted to any of a number of lugs, *q'*, on the said reservoir.

This enables the supplementary reservoir to be raised and lowered in the manner described in my aforesaid patent, but much more expeditiously.

The reservoir is fed with coal, as usual, through an opening in the stove, covered by a door, *r*, but this door is in the present instance hinged at the bottom instead of at the top, so that a large unobstructed opening is provided for the introduction of a coal-scuttle.

A principal objection to base-burning stoves as heretofore constructed is, that when the feeder-door is opened a puff of accumulated gas or smoke is apt to rush out into the room. This I have obviated by closing the top of the reservoir with a valve, *s*, which prevents the admission and accumulation of any considerable quantity of gas or smoke in the top of the stove.

This valve is raised by means of a cam, *s'*, before the feeder-door *r* is opened, in order to permit all smoke and gas to pass through apertures, *t*, into the chamber *M*, and thence to the chimney.

Instead of the valve *s*, the arrangement shown in fig. 10 may be employed. In this case the top of the reservoir is left open, and all gas, &c., which accumulates in the same and the top of the stove, are drawn off before opening the feeder-door, through apertures, *u*, which are uncovered by raising a valve, *v*. In this case also, the door *r* is not permitted to fall open to its full extent, as shown in figs. 1 and 4, but is sustained in such a position when open that it may serve in a measure as a chute to conduct the fuel into the reservoir.

Among the advantages possessed by my improved stove may be mentioned the fact that the parts most liable to burn out, that is, the grate and supplementary reservoir, can be readily detached and replaced by new ones without taking the stove apart or requiring the

services of a skilled workman, as with other stoves of this class.

The serrations on the edges of the rings of the grate, when the latter are turned, crush the coal or cinders which may have lodged between them, the grate being thus effectually prevented from becoming clogged.

I do not claim the door *s* and eccentric *s'*; but

I claim—

1. In a base-burning stove, the arrangement of the air-chamber *D* surrounding the fire-pot, upper hot-air chamber *F'*, and connecting tubes *F*, all substantially as described.

2. The door *G*, having at its lower edge a central projection, *m*, of the form described, in combination with the stove-body, having recesses *m'* and projections or lips arranged below said recesses, as specified.

3. The two sets of staples *d d'*, arranged within the base of the stove, as set forth, in combination with the grate and its hooks, or their equivalents, as described.

4. The bearings *e e' e''*, arranged as described, in combination with the adjustable rod *L* and the hinged grate, as set forth.

5. The supplementary reservoir *H'*, having a flange, *q*, adapted to lugs *q'* of the reservoir proper, as set forth.

6. The valve *s*, covering the reservoir, in combination with the apertures *t*, forming a communication between the top of the stove and chamber *M*.

7. The valve *v*, arranged substantially as described, and as shown in fig. 10 of the drawing, in respect to the apertures *u*.

8. The combination and arrangement, substantially as described, of the annular valve *j*, apertures *i*, damper *k*, and pipe *k'*.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY C. MARCH.

Witnesses:

JNO. B. BROWN,  
MICHAEL MARCH.