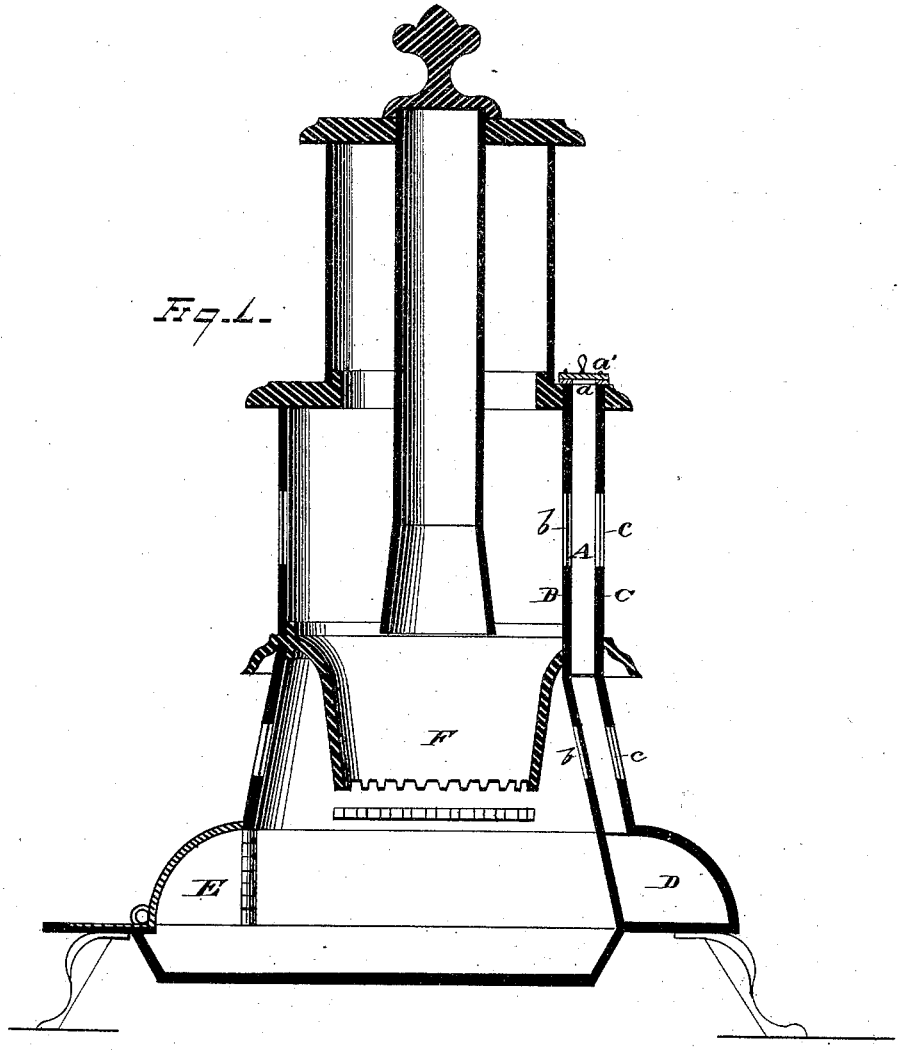
2 Sheets—Sheet 1.

T. J. MARCH.

Stove.

No. 198,034. Patented Dec. 11, 1877.

Fig. 1.



WITNESSES

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T. J. MARCH.

Stove.

No. 198,034. **Patented Dec. 11, 1877**

Fig. 2.

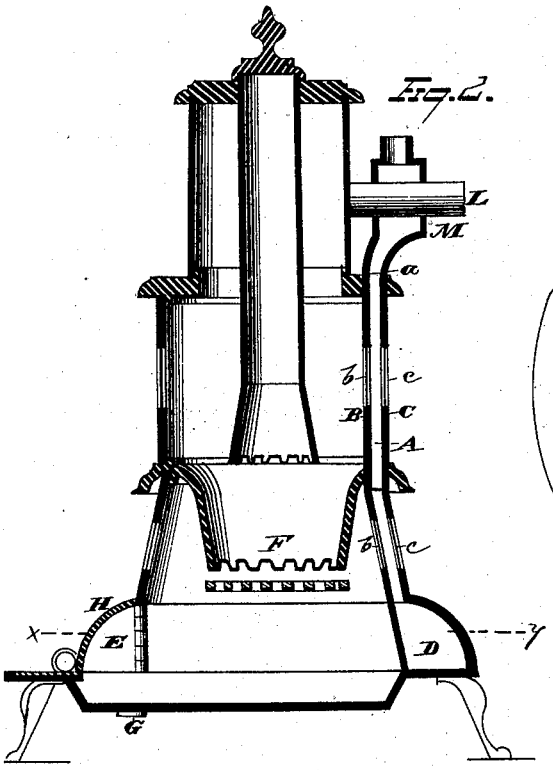


Fig. 3.

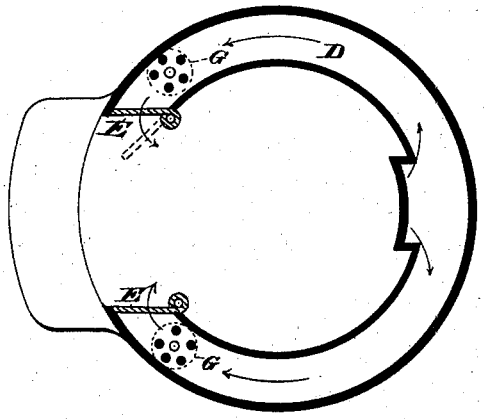


Fig. 4.

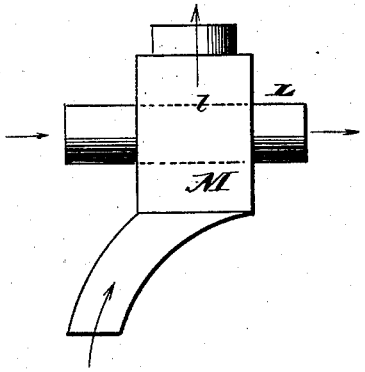
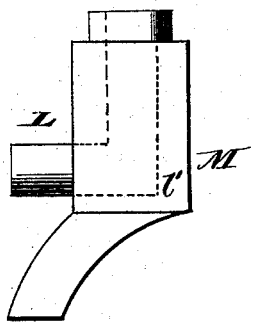


Fig. 5.



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UNITED STATES PATENT OFFICE.

THOMAS J. MARCH, OF LIMERICK STATION, PENNSYLVANIA.

IMPROVEMENT IN STOVES.

Specification forming part of Letters Patent No. **198,034**, dated December 11, 1877; application filed October 6, 1877.

To all whom it may concern:

Be it known that I, THOMAS J. MARCH, of Limerick Station, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Stoves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to certain improvements in magazine or base-burning stoves, and is designed to provide a stove having the following features of construction and manner of action.

A vertical flue in the rear of the stove has free communication at its top with the air of the room, and connects at its bottom with a horizontal flue, which latter is formed in the rim of the base of the stove, except at its front. This base-flue is provided with two end openings, which communicate with the ash-pit, and through these openings, when the front draft of the stove is closed, a current of air is passed up into the fire.

Draft is obtained by air being drawn in through the top opening of the rear vertical flue, which thence passes down said flue into the base-flue, and from out its front-end openings into the fire-pot.

By providing the inner and outer casings of this rear vertical flue with mica lights, the entire circumference of the combustion-chamber is made illuminated; while further advantage resulting from the invention consists in heating the base of the stove by the hot-air current, which both serves as a draft, and, by reason of its having been first passed through the rear vertical flue, its action on the fuel in the fire-pot is the more intense.

This construction dispenses with the unsightly projections so common in the rear of base-heating stoves, and also avoids the necessity of cleaning the base-flues, since the draft does not permit of the passage of soot and smoke into them. It also causes the heat radiated from the rear of the stove to be applied in heating the incoming draft of air, which latter is thereby caused to warm the sides and front of the base of the stove in its passage into the fire-pot.

The height of the stove can be made less than otherwise would be the case, and also the fire-pot can be located nearer the floor, thus heating the lower or floor air.

The second main feature of my invention consists in the adaptation to change the stove from a base-heater to a double heater, which is as follows: The end terminations of the horizontal base-flue, which, respectively, open at the front base of the stove into the ash-pit, are provided with doors, dampers, or removable partitions. When the stove is to be used as a base-heater, the incoming draft freely passes from out these ends, which, in such case, are made open into the ash-pit; but upon using the stove as a double heater, these end openings of the base-flue are to be closed, and the fire-draft is to enter the ash-pit through the front hearth, as in the ordinary manner.

Near these horizontal end openings of the flue there are formed vertical openings, which latter connect the two respective end portions of the flue with the air below the stove, and give passage for the lower atmosphere to pass up into the base-flue.

By reason of the horizontal end openings of the flue being closed, as stated, the currents of air thus introduced into the base-flue pass, respectively, around either side of the stove, and together ascend the rear vertical flue. The top opening of this rear flue is previously provided with an attachment which connects it with a heat-pipe leading into other apartment or apartments, and the ascending current of air, warmed by its passage through the stove, is conducted off by the heat-pipe connections. In this way, by adding a few parts to the stove and adjusting other parts, it can be readily changed from a base-heating to a double-heating stove.

Referring to the drawings, Figure 1 is a view, in vertical central section, of the stove as a base-heater. Fig. 2 is a similar view of the stove prepared for use as a double heater. Fig. 3 is a plan section taken through line *x y* of Fig. 2. Fig. 4 is a detail view, showing the manner of connecting the heat-pipe to the

rear vertical flues when the stove is used as a double heater. Fig. 5 is a modification view of the same invention shown in Fig. 4.

The rear vertical flue A is provided with the opening *a* and damper *a'*, which controls its communication with the open air in the rear of the stove. Its inner and outer walls B and C are, respectively, formed with mica lights *b* and *c*, which allow of heat-radiation, together with illumination on all sides of the stove. These walls are each divided into vertical sectional plates, forming different castings, as indicated, the upper sections corresponding to the combustion-chamber above the fire-pot, while the lower sections extend down to the base-flue D. This latter flue extends horizontally around the outer body of the base of the stove, and is made with the two end openings E at the front of the stove. These openings cause the flue to connect with the ash-pit in the front base of the stove, and are provided with doors hinged to the inner wall of the flue, thus allowing free communication of the latter with the ash-pit. Or, instead of having hinged doors, each of the openings may be provided with a damper and a suitable rod, so as to be operated from without the stove; or the openings may be adapted to be opened and closed, as desired, by removable partitions, or in any other suitable way.

By constructing the stove as shown, its height is lessened and its build made more compact than in stoves of ordinary use. The fire-pot F is thereby caused to be near the floor, thus heating the lower strata of the air in the room. The floor of this base-flue is provided, near each of its horizontal end openings, with a vertical opening and plate, as shown at G, which connect said opening directly with the air beneath the stove. When the stove is used as a base-heater these latter openings G are closed, and the doors of openings E are opened. So, too, the draft H in the front of the stove is closed, and the parts, being so arranged, shut off all air from the combustion-chamber, except such as passes through the rear flue A. Air is thus drawn in a draft-current through opening *a*, down into the flue A, and from out its bottom into the base-flue D. At the point of connection of these two flues the air is divided into two horizontal currents, passing, respectively, about either side of the stove, from the rear around to the front, and out through the two end openings E into the ash-pit. The two currents here reunite, and are drawn up through the fire-pot into the combustion-chamber, and, finally, discharged through smoke-flue L. In this way air is subjected, during its downward passage through flue A, to the heat radiated from the rear of the stove, and after warming the base of the stove it is passed up into the fire-pot, still having a heated temperature, and acts quickly and strongly upon the fuel as a superior draft to the combustion, by reason of its having been warmed previous to its introduction into the flame.

To change the action of the stove from that of a base-heater to a double heater, I apply to the top opening *a* of the rear flue the heating-pipe collar or thimble M, (shown in detail in Fig. 4,) which latter may be connected suitably with a pipe leading into other room or rooms.

Since the smoke-flue L is in vertical line above opening *a*, its connecting-pipe may be passed right-angularly through collar M, as shown in dotted line at *l*; or, if preferable, the smoke-pipe may be made with an elbow-joint, *l'*, and then be passed up vertically within the heating-pipe, as shown in Fig. 5. In either case the heat-conducting pipes would be provided with the interior pipes, which latter would serve to still further warm the air passing through said heat-pipes.

To prepare the stove for such operation as a double heater, either of these two forms of heat-conducting apparatus is attached to flue A. Openings E of the base-flue are closed, and openings G are opened. The front draft H is also opened. Air entering this front draft passes up into the combustion-chamber and out through flue L, while the air which is within the base-flue and the rear vertical flue, becoming rarefied, ascends and passes out through opening *a* into the heating-pipe connections.

The vacuum thus caused within the base-flue is supplied by fresh air rushing in from beneath the stove through vertical openings G; and since the horizontal end openings E are closed this air must pass around the base, and up along the rear of the stove, in a course just the reverse of that taken by the air within flues A and D when the stove is acting as a base-heater. The air thus passed into the connecting heat-pipe from out opening *a* is further subjected to the heat from the smoke-pipe as the latter passes through the said heat-conducting pipe, as shown in views 4 and 5 of the drawings.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a magazine-stove, the combination, with the rear vertical air-flue, of the horizontal air-flue formed in the rim of the base of the stove, substantially as described.

2. In a magazine-stove, the rear vertical air-flue, having both its inner and outer walls provided with mica lights or sheets, in combination with the air-flue formed in the rim of the base of said stove, substantially as described.

3. In a magazine-stove, the horizontal air-flue formed in the rim of the base of the stove, and provided with dampers or similar means, as described, for controlling communication of the said flue with the fire-chamber, substantially as described.

4. The combination of the rear vertical air-flue and the base air-flue, the latter being formed with the two horizontal front openings, which are provided with doors or similar damper mechanism, substantially as described.

5. The combination, with the base air-flue, of the rear vertical air-flue, whose inner and outer walls are formed with mica lights, one set of said lights being in a horizontal plane above, and the other set being in a plane passing through the fire-pot section, substantially as described.

6. The combination, with the rear vertical air-flue and heating-pipe connections, of the base air-flue, made with the openings in its floor, whereby said base-flue may have direct communication with the air of the room beneath the stove, substantially as described.

7. The combination, with the rear vertical air-flue and heating-pipe connections, of the base air-flue, having communication with the fire-chamber, which is adapted to be closed, said base-flue being also provided with openings, whereby it may communicate with the air of the room, substantially as described.

8. The combination, with the rear vertical air-flue, of the air-flue formed in the rim of the base of the stove, and made with the two openings, whose communications with the fire-chamber are adapted to be closed, said base-flue having openings to communicate directly with the air of the room, which are provided with plates or other damper mechanism, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of September, 1877.

THOMAS J. MARCH.

Witnesses:
JAS. BROWNBACK,
JAMES M. PENNYPACKER.