D. G. LITTLEFIELD.

Magazine Stove.

No. 111,951. Patented Feb. 21, 1871.

Fig. 1.

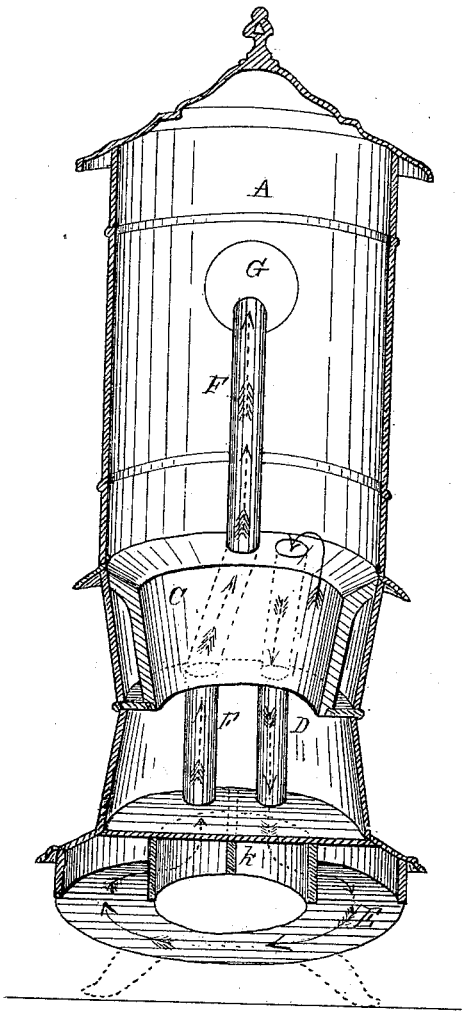
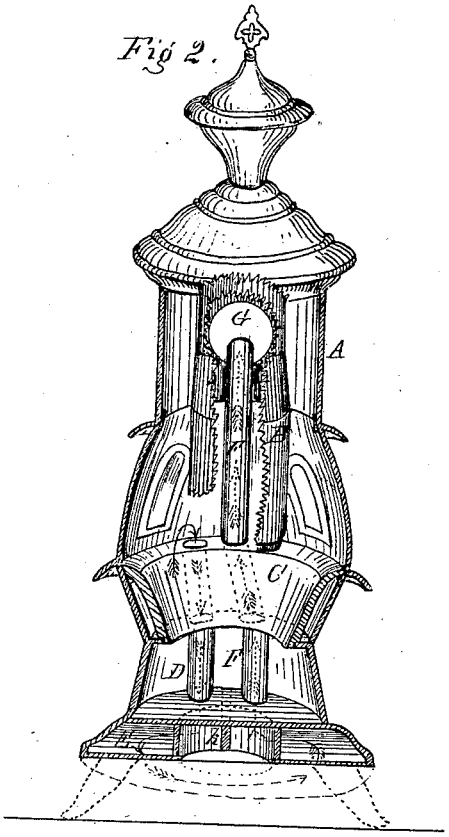


Fig 2.



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DENNIS G. LITTLEFIELD, OF ALBANY, NEW YORK.

Letters Patent No. 111,951, dated February 21, 1871.

IMPROVEMENT IN BASE-BURNING STOVES.

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

I, DENNIS G. LITTLEFIELD, of the city and county of Albany, in the State of New York, have invented an Improvement in Stoves, of which the following is a specification.

The nature of my invention consists in the employment of a passage in the form of an inverted siphon, the short arm of which communicates with the combustion-chamber, and extends downward to and around the base of the stove, the long arm extending thence upwardly, and terminating in the smoke-pipe.

By this arrangement a portion of the heated products of the fire is conveyed to the base of the stove, while other portions continue on their upward passage, and the intensity of the combustion is not diminished by impairing the draught or by the accumulation of gases in the upper part of the stove, as is liable to be the case when all of the products are turned downward for the purpose of heating the base of the stove.

Figure 1 is a vertical sectional perspective of my improvement applied to a cylinder stove, and

Figure 2 is a like view of a base-burning magazine-stove, with my improvement applied, a portion of the magazine being broken away to show the long arm of the siphon.

As represented in the drawing—

A is the outer case of the stove, which may be either a plain cylinder or a base-burning magazine-stove.

When of the latter kind, B is the magazine for fuel and C the fire-pot.

D is the short arm of the inverted siphon-shaped passage, which begins a short distance above the surface of the fire-pot, where the combustion is most intense. This tube may be provided with a guard to prevent fuel accidentally entering it, or it may be closed at the top and formed with an opening or openings on the side next the fire, through which the gaseous products of combustion can enter.

The course of this siphon-tube is downward, and preferably within the case of the stove until the base is reached, when it opens into an annular chamber, E, surrounding the ash-chamber, and occupying the outer portion of the base.

This chamber is divided by an upright partition, *k*, at the rear. The short arm of the siphon enters on one side and the long arm F on the other of this partition, thereby necessitating the circulation of the heated gases around the base before they escape by the long arm. The latter rises above the fire-pot so as to be exposed to the heat at its upper extremity, and terminates by opening into the smoke-pipe G. It may be carried up as a separate pipe in the interior of the case, or one side may form a portion of the case itself.

Two or more tubes or flues may be employed to convey the heat down in place of the short arm, or a jacket may surround the fire-pot, and receive a portion of the heat, which is returned to the smoke-pipe by the heated tube or passage F.

The operation is as follows:

The plate or metal forming the long arm of the siphon is heated by the direct action of the fire rarefying the air within it, and causing it to move upward and pass into the smoke-pipe. At the same time the heated current from the fire, on its passage to the smoke-pipe, passes parallel with and unites with the rising current from the long arm of the siphon. These two forces produce a partial vacuum in the siphon and annular chamber E, and the gases of combustion are thereby drawn into the open end of the short arm, to supply the place of the displaced air. Thus a continuous circulation is produced, by which a heated current from the fire is constantly drawn through the siphon, filling the enlarged chamber of the base, and heating the lowest extremity of the stove; and this result is obtained without interfering with the direct upward draught through the fuel to the smoke-pipe, which is necessary to a sufficient supply of air, to maintain that perfect and complete combustion within the fire-pot which is shown by a clear glowing flame and white heat—a condition which cannot be maintained when all the gaseous products of combustion are carried to the base, as it is in the ordinary reversible-flue stoves.

I claim as my invention—

In combination with direct-draught stoves, the employment of an inverted siphon, the short arm of which communicates with the combustion-chamber, and the long arm with the smoke-pipe, for conveying a portion of the products of combustion to the base, substantially as set forth.

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