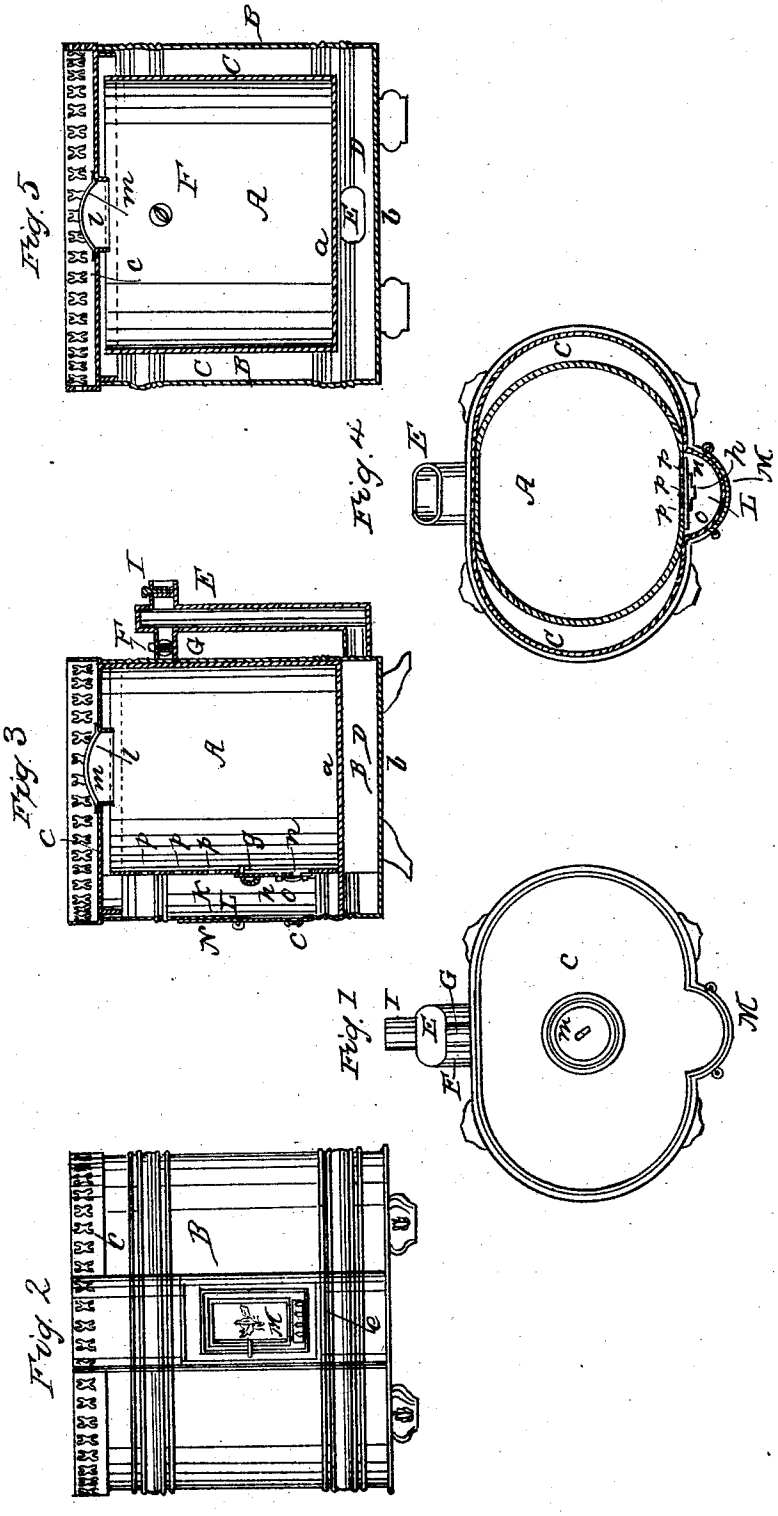
S. FISHER.

Heating Stove.

No. 18,580.

Patented Nov. 10, 1857.



UNITED STATES PATENT OFFICE.

SAMUEL FISHER, OF CANTON, MASSACHUSETTS.

STOVE FOR BURNING TAN, SAWDUST, &c.

Specification of Letters Patent No. 18,580, dated November 10, 1857.

To all whom it may concern:

Be it known that I, SAMUEL FISHER, of Canton, in the county of Norfolk and State of Massachusetts, have invented an Improved Stove for Burning Large Fuel, as well as Tan, Sawdust, or other Fine or Small Fuel; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1, denotes a top view of the said stove. Fig. 2, a front elevation of it. Fig. 3, a transverse and vertical section. Fig. 4, a horizontal section, and Fig. 5 a longitudinal section.

The chamber of combustion of this stove is shown at A, and as arranged within another chamber or case B, and so that there may be two diving flues C, C, between the two and each be of a crescent shape in its horizontal section. The bottoms *a*, *b*, of said chamber of combustion and the case B, are also arranged with a flue space D, between them the diving flues opening into the said space D. The chamber of combustion does not reach quite up to the top plate *c*, of the stove but terminates a short distance therefrom in order to allow the smoke and volatile products of combustion to pass from the said chamber A, and into the diving flues.

Leading out of the upper part of the chamber of combustion and into an upright pipe E, is a short discharge pipe F, provided with a damper G, the said pipe E, leading out of the flue space at the lower part of the stove and being provided with a damper I, as shown in the drawings. The damper I, serves to regulate the draft through the descending flues and up the pipe E, when the damper G, is closed. By opening the damper G, smoke passes directly through the pipe F, without going down the descending flues.

Directly in front of the chamber of combustion there is an upright air chamber K, provided in its front with an opening L, having a door M, applied to it, such door being provided with an opening and a register valve *e*, thereto.

Besides the above the chamber of combustion may be provided with an opening *g*, and a door *h*, arranged therein as shown in the drawings. Above this door opening *g*, the chamber of combustion has numerous holes or passages *p*, *p*, *p*, leading from it into the air chamber, the same being as shown in Figs. 3 and 4. The stove may also have an opening *l*, through its top plate the same having a cover *m*, fitted to it as shown in the drawings.

By means of the openings *p*, *p*, *p*, the air from the chamber K, passes into the chamber A, and supplies the fuel with oxygen especially when the chamber A, is filled with fuel. It should be borne in mind that the stove is specially calculated to burn wood shavings which when a mass of them is lighted at its top will readily burn downwards. It is not desirable to fire them at the lower part of the mass, for in such case the combustion of them will be too rapid. Therefore a grate in the bottom of the chamber A, would not answer or be desirable. Through the said opening the stove may be charged with fuel, and said fuel inflamed on its top surface.

It is intended when tan or fine fuel is employed in this stove, that the fuel shall burn downward and receive its air from the numerous holes *p*, *p*, leading from the air chamber into the chamber of combustion. The secondary door and its door opening of the air chamber and chamber of combustion enables the stove to be supplied with fuel through the air chamber whenever it may be desirable to use sticks of wood or other large fuel. This secondary door is also furnished with an air hole and turning valve cover as shown at *n*, *o*.

From the above it will be seen that a stove constructed in the above described manner, may not only be used for burning shavings sawdust or tan, but may also be employed to burn the larger kinds of fuel as occasion may require, the air chamber in front with its inner door opening and door, and series of openings over the said door enabling the stove to be thus used.

The register of the outer door of the air chamber serves to regulate the amount of air supplied to the openings *p*, *p*, above the inner door.

The chamber K, causes the air which flows into it, to be heated prior to its passage through the openings *p*, *p*, *p*. The combustion of the fuel is improved by such

treating of the air. Thus the chamber K, besides affording advantages in the way of regulating the supply of air to the passages *p*, *p*, *p*, (which it does in connection with its air inlet openings and valves of its front) is further advantageous viz., by operating to heat the air; for the air in the chamber will be heated more or less by the heat abstracted from the part which separates the two chambers K, and A.

I do not claim combining with a fire pot or place, an air flue or chamber, for air to pass through and over the fuel, when the fire-pot or chamber has a grate and a current of air passing up through the grate and the fuel on the same, for in my stove there is no grate; and an upward current running through the entire mass of fuel would consume the fuel too fast, and render the stove liable to explode, but

What I claim is—

An improved stove of the kind and for the purpose as described or as constructed not only with a fuel chamber without a grate or air passage or passages through its bottom, but with an air chamber arranged in front of the chamber of combustion and made to communicate therewith and the external atmosphere and the side flues, whereby, air can be supplied laterally to the chamber of combustion and made to pass over the same and down into the flues, such air not only supporting slow downward combustion of the fuel but serving to create draft down the flues so as to carry off the smoke and combustible gases and prevent explosion of the stove.

In testimony whereof, I have hereunto set my signature.

SAMUEL FISHER.

Witnesses:

R. N. Eddy,

F. P. Hale, Jr.