J. E. FISK.

Heating Stove.

No. 2,324. Patented Nov. 3, 1841.

Fig: 1.

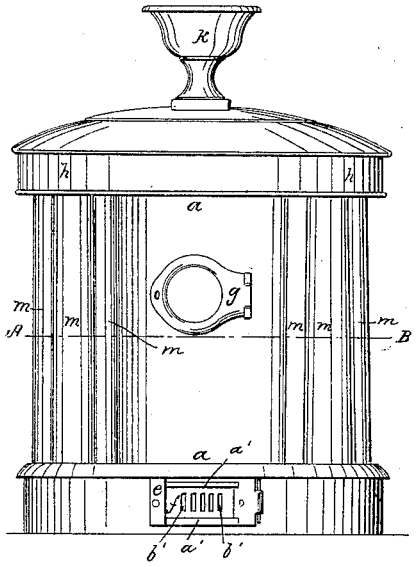


Fig: 2.

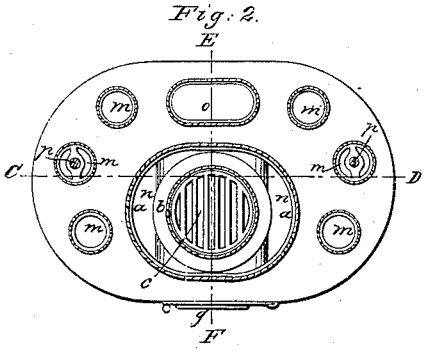


Fig: 3.

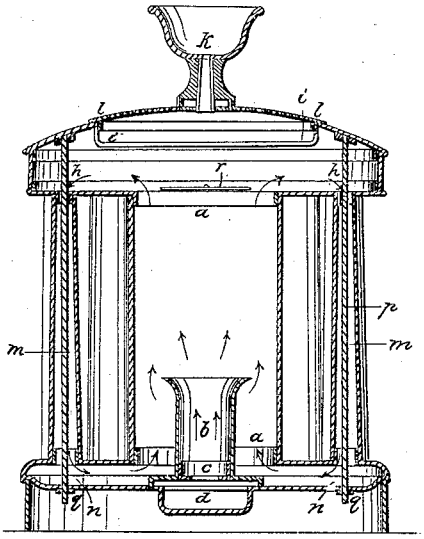
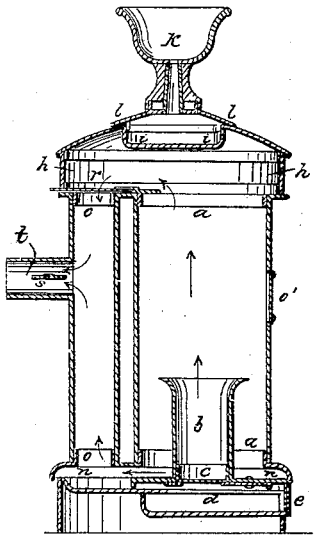


Fig: 4.



UNITED STATES PATENT OFFICE.

JOSEPH E. FISK, OF SALEM, MASSACHUSETTS.

CONSTRUCTION OF AIR-TIGHT OR ARNOTT STOVES.

Specification of Letters Patent No. 2,324, dated November 3, 1841.

To all whom it may concern:

Be it known that I, JOSEPH E. FISK, of Salem, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Air-Tight Stoves, and that the following is a full and exact description of the same, reference being had to the accompanying drawings, which will be hereinafter explained, and which, taken in connection herewith, form my specification, wherein I have set forth the principles of my said invention by which it may be distinguished from others of a similar character, together with such parts or combinations as I claim and for which I solicit an exclusive property for fourteen years to be secured to me by Letters Patent.

The figures of the accompanying plate of drawings represent my improvements.

Figure 1, is a front elevation of the stove. Fig. 2 is a horizontal section, on the line A B, Fig. 1. Fig. 3, is a longitudinal vertical section, taken on the line C D, and Fig. 4, is a cross vertical section on the line E F, Fig. 2.

My improvements are in those stoves, known as the invention of Dr. Arnott, and consist in conducting the smoke and heated products of combustion, from the fire chamber, or apartment in which the fire pot is situated, through several pipes arranged around said chamber, and heating them in their passage, and reconducting them into contact with the burning fuel, thus keeping up a constant circulation, and allowing only such quantities of smoke, &c., to escape, as the little fresh air introduced requires.

In the drawing *a*, *a* represents the fire chamber, of cylindroid form, being shown in elevation in Fig. 1, and in section in Figs. 2, 3, 4.

b is the fire pot, shaped as seen in Figs. 2, 3, 4, and arranged in the center of the fire chamber, so as to leave considerable space between its exterior and the interior surface of the fire chamber, and be entirely independent of the same, said fire pot having a suitable grate *c*, at the bottom, hung on any of the usual plans, and placed directly over the ash box *d*.

The draft is derived through the door *e*, of the ash box, which, with the slide *f*, (moving in suitable guides *a' a'*), has rectangular slots or spaces *b' b'*, &c., so that when these slots are in apposition with each other, the air or atmosphere is freely fed to the fire pot, and when, on the contrary, the slide *f* is so arranged, that the bars, between the spaces, cover the slots in the door, the air is entirely excluded. It is scarcely necessary to add, that, by varying the position of the slide the quantity of air admitted will be accordingly varied.

The door *g* in the fire chamber, through which the fuel is fed, is circular and is "turned," so as to fit air tight in its place, and may have a pane of mica, or other transparent substance, (which will withstand the effect of the heat), inserted therein so as to render the fire visible.

The top of the fire chamber opens into the oval shaped hollow entablature or apartment *h*, *h*, whither the smoke, &c., is conducted, as shown by the blue arrows in Fig. 3, and while here it serves to heat and evaporate the water, (which is conducted to the basin *i i*, (on the top of the stove), through the arm shaped tunnel *k*), and the steam or vapor which is thus produced, escapes through proper holes in the plate or cover *l l*, as shown in Fig. 3, and mingles with and purifies the atmosphere of the room.

From the hollow entablature or apartment *h h*, the pipes *m*, *m*, *m*, *m*, *m*, *m* conduct to the hollow and similarly shaped base *n*, *n*, just above the ash box. These pipes with the smoke pipe *o o*, (the upper and lower ends of which likewise communicate respectively with the apartments *h h* and *n n*), are arranged around the fire chamber, as seen in section in Fig. 2, or in any convenient and desirable manner, and through two of these as shown in Fig. 3, the confining rods *p*, *p*, are passed, which, with the nuts *q*, *q*, hold the several parts firmly together, the parts being fitted in any proper manner to be air tight.

The bottom of the fire chamber *a*, *a*, or rather the space between the periphery of the fire pot and the interior of the lower part of the fire chamber, opens into the hollow base *n n*, leaving a free communication between said base and the fire chamber. The smoke and heated products of combustion, it will now be seen, will pass in the several directions indicated by the blue arrows, first upward, into the hollow entablature, thence downward, through the vertical pipes *m*, *m*, &c., to the hollow base *n n*; thence upward, between the fire pot and fire chamber, turning around the top of the

former, and again coming in contact with the burning fuel, where they are reheated and more effectually consumed than before, and then, with the smoke, &c., newly generated, repass the same route as described, and are constantly circulated, a small quantity only escaping, in the direction denoted by the red arrows, to make way for the fresh atmosphere which is admitted.

In igniting the fire, it is necessary to open the valve *r* over the top of the smoke pipe *o o*, and permit the smoke, &c., to pass out freely as indicated by the black arrows in Fig. 4, passing through the discharge pipe *s*, by the valve *t*, which should be open for this purpose, but closed, or nearly so, when the fire is well kindled.

The parts of the stove may be constructed of cast or sheet iron, or any other metal, suited to the purpose and should be fitted together as shown in the different sections, or in any other way to be air tight.

It will be seen, by the above arrangement of the parts of the stove, that the circulation of the smoke &c., serves to heat, in its route or passage, the metal composing the pipes, and through it the air of the room, thereby economizing heat to a considerable extent, the heat causing or operating the circulation.

Having thus described my improvements, I shall claim as my invention—

Arranging the fire pot in the fire chamber of an "air tight stove," in the manner described, so that the smoke and heated products of combustion, after being conducted through the several chambers and pipes as herein above specified, and imparting heat to the room, are again brought into direct contact with the burning fuel, by passing between said fire pot and chamber to the surface of the fuel in the fire pot, when such parts as are capable of further combustion, are more effectually consumed and then again circulated as before, the whole arrangement and operation being substantially as herein above set forth.

In testimony that the foregoing is a true description of my said invention and improvements I have hereto set my signature this twenty-seventh day of July in the year eighteen hundred and forty-one.

JOSEPH E. FISK.

Witnesses:

R. H. EDDY,

EZRA LINCOLN, Jr.