R. D. GRANGER.

Cooking Stove.

No. 5,478.

Patented March 21, 1848

Fig. 1

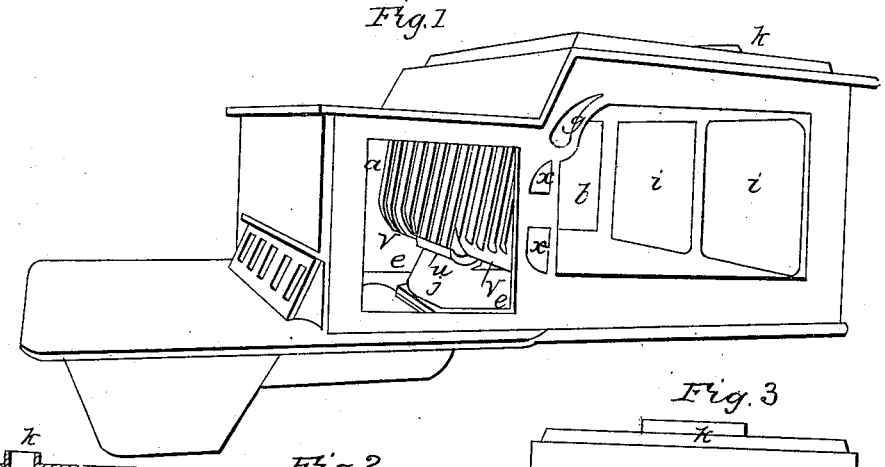

Fig. 2

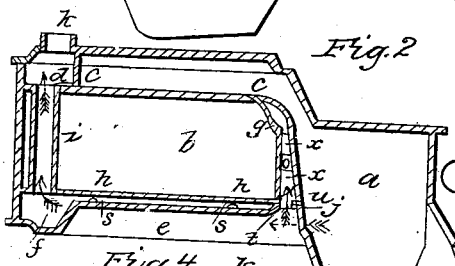

Fig. 3

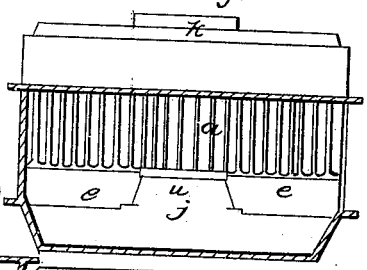

Fig. 4

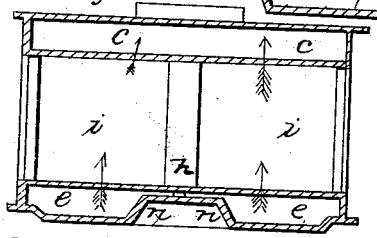

Fig. 5

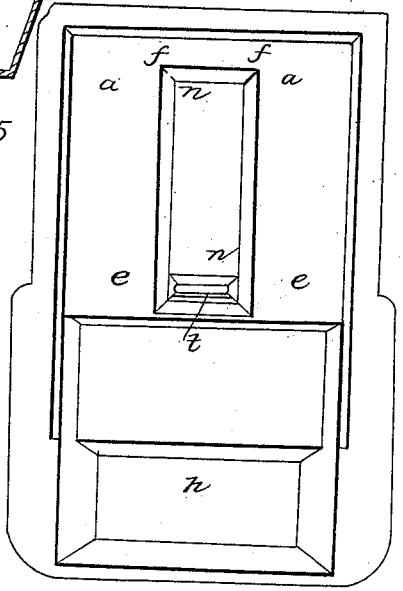

Fig. 6.

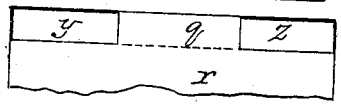

Fig. 7

UNITED STATES PATENT OFFICE.

R. D. GRANGER, OF ALBANY, NEW YORK.

COOKING-STOVE.

Specification of Letters Patent No. 5,478, dated March 21, 1848.

To all whom it may concern:

Be it known that I, RENSSELAER D. GRANGER, of Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Cooking-Stoves; and I do hereby declare that the following is a full, clear, and exact description of my said improvements, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a stove embodying my improvements; Fig. 2 is a vertical longitudinal section of the same; Fig. 3 is a vertical cross section through the fire chamber; Fig. 4 is a similar section through the hinder portion of the oven; and Fig. 5 is a view of the bottom plate of the stove, inverted.

The same letters refer to corresponding parts in all the figures.

My improvements are chiefly applicable to that description of stove well known among makers and dealers as the "Premium Stove," in which a single oven is situated immediately in rear of the fire chamber, there being direct flues the full breadth of the stove opening into the fire chamber both above and below the oven, the former communicating directly with the smoke pipe, and the latter connecting with a vertical flue at the back of the stove, which passes up to the smoke pipe.

One of the principal objections to the Premium stove has been that when the oven is in use, the principal part of the heat traveled in a direct line and in one body to the smoke pipe, passing through the center of the flue beneath the oven; by which means while the middle portion of this latter is unduly heated and the plates burned out, the sides are left comparatively cool; and this latter difficulty is aggravated by the effects of the increased radiation from these portions owing to their greater exposure to the external air. To remedy this evil, I close the middle portion of the mouth of the flue beneath the oven, by what I term a "bulkhead," the horizontal section of which may resemble that shown in Fig. 8. This bulkhead is marked *j* in Fig. 3, and may occupy from one third to one half of the entire breadth of the stove, thus throwing the heat under the sides of the oven. To prevent this bulkhead which is exposed to the greatest heat from being rapidly burned out and at the same time introduce a current of coil air into the space *o*, between the plates at the back of the fire chamber *a*, in order to modify the intensity of the heat radiated from the fire chamber into the oven, as well as to preserve the plates, the bulkhead is made hollow, a broad air passage *t*, (see Fig. 5) being constructed through its interior communicating at the bottom with the external air, and at the top with the vacuity *o*. The usual side holes *x x* allow the escape of the hot air from *o*. This plan of introducing air through the bulkhead at the bottom of the stove is attended with great advantage; the air being applied at the point where it is most needed, viz, the center of the back-plate of the fire chamber, whereas, when side holes only are used, the air entering at the lower holes becomes instantly rarified, and escapes at the upper holes without penetrating the interior of the vacuity.

It is evident that the two bodies or currents into which the heated air is divided by the bulkhead *j*, will, after passing this latter, each take the nearest direction to the smoke pipe, and consequently converge as they pass beneath the oven bottom and up at its back, thus defeating in a degree the end desired to be accomplished. To prevent this and to preserve the parallelism of the currents, I adopt one of the following expedients, viz., first, I close the center portion of the top of the vertical flue at the back of the oven, which may be conveniently effected by extending the middle portion of the top oven plate until it strikes the back plate of the stove, see Fig. 6, where *r* is the top oven-plate the middle portion at *q* extending over and closing the center part of the flue *y z* at the rear of the oven and forming two exits *y* and *z*, for the heated air which is thus carried in two separate bodies under the bottom and up at the back of the oven. The bottom of the vertical flue may be closed if desired in the same manner, by extending the middle portion of the bottom oven-plate to the back of the stove, as before described. Secondly, I sometimes actually divide the rear flue vertically into two side flues, by introducing proper division strips or other suitable partitions, or by giving the back oven plate the horizontal section shown in Fig. 7. The mode of construction however which I prefer and usually adopt is, to dispense with the ordi-

nary flue at the rear of the oven, and connect the top and bottom flues by means of two detached flues or pipes *i i*, which open at the top into the flue *c c* above the oven, and at the bottom into the flue *e e* beneath it. These pipes which I generally make of sheet iron, by their increased radiation tend to render the heat at the back of the oven more nearly equal to that in the front part.

The bulkhead *j* I form by "bonneting up" the bottom plate of the stove, (see Fig. 5, which it will be borne in mind is represented as inverted,) and for the purpose of carrying out fully my general design, I continue the "bonneting up" backward to within five or six inches of the back of the stove, the forming two parallel flues *e e* in place of the one in general use; the space back of the bonneting serving as a cross flue to connect the two longitudinal ones. This construction will be easily comprehended by regarding Fig. 5; where *h* is the ash pan, *n n* the bonneting up; *e e*, *e e* the two longitudinal flues formed by the bonneting and *f f* the cross flue connecting the latter.

t is the air passage upward through the bulkhead *j*.

I do not usually raise the bonneting *n n* so high as to strike the oven bottom, but prefer to leave a small space *s s* above it's top in which a limited portion of hot air may circulate. Upon the top of the bonneting *n*, I cast several small studs *h h* which serve to support the oven bottom and prevent it's sagging.

The mode in which I lock together the bottom plate of the oven and the fireback or plate is peculiar and is for the purpose of supporting these plates in the direction they are most liable to give way. This is most clearly represented in Fig. 1, in which it will be seen that the bottom of the oven plate projects at *u* over the "bulk head" *j* on which rests there being a hole through this part of the projection for the air passage (see Fig. 2). This part turns up over the edge of the fire back, *a*, at the center where the most intense heat is and prevents its bulging out at that point while at the same time it is protected from burning out by the air passage behind, on each side of this center when the oven plate, if left without support would warp down and form an opening into the oven the back plate *a* is carried down and turns under the bottom oven plate at *v*, *v*, and forms a lock by which arrangement all the parts are firmly protected, locked and supported against any action of heat.

It will be seen by refering to Figs. 1 and 2 that I have cut off the front upper angle of the oven and extended up over the cold air chamber *g* between the oven plate and the fireback in order to modify the intensity of the heat radiated into the oven at this point where the whole force of the fire impinges in turning over the oven and thus preserving the plates. By cutting off the angle of the oven in the manner shown, I am enabled to avail myself of the use of the enlargement of the cold air chamber at *g*, without enlarging any of the dimensions of the stove, while the over suffers no detriment.

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

1. The use of the bulk head *j* for dividing the direct flue under the oven at the back of the fire which bulk head may have a current or cold air passing through the interior of it to protect it from the intense heat of the fire at that point substantially in the manner and for the purposes set forth.

2. I do not intend to claim the introduction of cold air through the bottom plate but I do claim the mode of introducing it in combination with the division of the direct flue under the oven substantially as set forth.

3. I also claim in combination with the bulk head above set forth the construction of the bottom flue and the mode of dividing the back flue behind said bulk head substantially as set forth.

4. I also claim the mode of connecting the bottom plate of the oven the back fire plate and bulk head as above described and for the purpose described so as to make the parts of one support the other at the point most liable to be injured by heat.

R. D. GRANGER.

Witnesses:
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W. P. N. FITZGERALD.