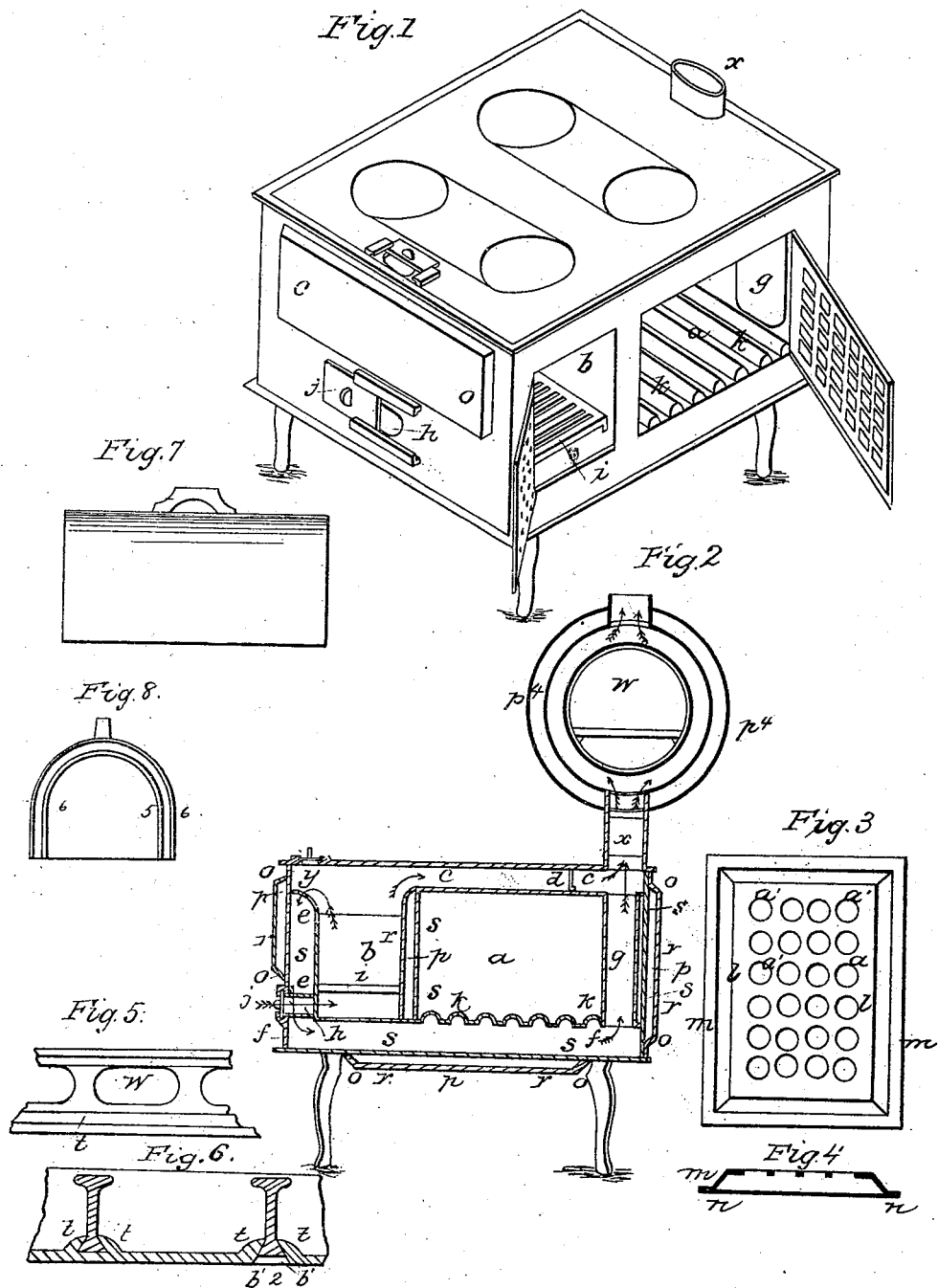


R. D. GRANGER.  
Cooking Stove.

No. 4,390.

Patented Feb. 20, 1846.



# UNITED STATES PATENT OFFICE.

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

## COOKING-STOVE.

Specification of Letters Patent No. 4,390, dated February 20, 1846.

*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 Improvements in Cooking-Stoves; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification.

Figure 1 represents an isometrical view and Fig. 2 a vertical longitudinal section of a stove embodying my improvements.

The external form is that of a rectangular box, there being but one oven *a* situated upon a level with, and behind the fire box *b*. It has a direct flue *c c* formed by the vacuity between the top plate of the oven and that of the stove; the communication through which to the smoke pipe *x* may be cut off by a damper *d*. It has also a diving flue *e e* descending in front of the fire box, and between it and the front plate of the stove and communicating with the horizontal flue *f f*, which comprises the whole area of the bottom of the stove, extending beneath both the fire chamber and the oven. The communication between this latter flue and the flue *c c* above the oven is by one or more vertical pipes or tubes *g*, placed near the back of the oven, through which the heated current passes from the flue beneath, to that above the oven, and thence to the smoke pipe. The object of the tubes or pipes *g* is to increase the radiation in the hinder part of the oven and to equalize more nearly the heat in back and front thereof. The top of the diving flue *e e* is defended by a grating *y* as usual to prevent coals and cinders from falling therein. A draft of external air is introduced through the front of the stove, (the end opposite the smoke pipe being considered the front,) by means of a tube *h* which passes through the front diving flue *e e* without communicating therewith, and enters the fire chamber immediately beneath the grate *i*. The draft through this tube is regulated by a sliding register *j*. The bottom oven plate is corrugated, or formed into hollow ridges of any convenient section, having their axes at right angles to the length of the stove, as shown at *k k*, the object being to retain the heated air for a longer time beneath the oven, and increase the radiation of heat. The bottom plate of the oven also extends

under the fire box and forms the bottom thereof, or in other words, one continuous plate forms the bottom of both the oven and the fire chamber, so that the heat radiated upon the portion forming the bottom of the fire chamber is communicated to that forming the bottom of the oven, by the conducting power of the metal of which it is formed.

I line my ovens, oven doors &c., with non-conducting substances, such as fire brick, plaster of Paris or pulverized soapstone made into a paste with clay, plaster of Paris, or any other suitable material which will bind together the particles of soapstone. Figs. 3 and 4 show my mode of preparing this lining.

*l, l* is a raised panel of iron hollowed upon the under side, resembling a shallow rectangular pan with inclined sides, having its surface pierced with apertures *a' a'* which may be of any convenient form, making a kind of grating. This panel has a flange *m m* by means of which it is riveted to a flat plate of iron *n, n*. The interval between the plates is filled with the nonconducting substance as represented by the tinted portion in Fig. 4, which figure represents a section of the lining, which is placed in the oven with the perforated side outward exposing of course the nonconducting substance and giving to the stove oven, the qualities of the brick oven. I also use the double plates with nonconducting substance between them and constructed as just described, to form a "summer dress" for stoves, they being in this case attached externally to the outer plates of the stove, and capable of being removed in winter.

When it is required to attach nonconducting substances permanently to the outer plates of the stove, I use a process which I call "jacketing" by which I effect the object in view without augmenting the dimensions of the stove as measured at the lines of junction of the plates. I cast my sides, ends, doors, bottom plate — with raised hollow panels *o o*, constructed precisely as described for my oven linings and summer dress, excepting only that the apertures forming the grating instead of being in the panel *l l* Fig. 3, are pierced in the flat plate *n n*, which is attached thereto. The tinted portions *p p* and in Fig. 2 represent the nonconducting substance which is retained in the cavity of the paneled plates *r r*, by the perforated plates *s s*.

For lining my fire box with fire-clay or other suitable refractory substances in a plastic state, I make use of the ribs of iron exhibited in side elevation in Fig. 5 and in section at Fig. 6. Both the upper and lower edge of the strip are formed dovetailing, and the latter slides between two ledges *t t* cast upon the plate *u u* which serve to secure it. The ribs may be perforated to lessen the weight of metal and strengthen the attachment as shown at *w* Fig. 5. 1 Fig. 6 shows the manner of molding the ledges when attached to the inner surface of the outside plates of the stove; and *z* of the same figure, the mode I adopt to facilitate the molding of the inner plates, where the cavities *b' b'*, are not objectionable. The tinted portion represents the nonconducting substance.

20 I intend to adapt elevated ovens to a part of my stoves, and shall for summer use construct them as shown in Fig. 2, where *w* represents one of these ovens, made in the usual manner except that an outer plate or jacket 4, 4, is made to surround the oven externally at such a distance therefrom as to leave a vacuity which I fill with nonconducting substances, as represented in the drawing by the yellowish tint. For winter use I dispense with the clothing and use the oven in its common form.

Fig. 7 is a side elevation and Fig. 8 a cross section of a movable oven which I

place over the boiler holes or griddles of my stoves; being an inverted hollow receptacle, somewhat similar in its mode of application to the dish covers used at table. It is placed over the articles to be baked,—with the mouth downward, and serves to confine and radiate the heat thereon. It is constructed with parallel plates 5, 5 6, 6, placed a little distance asunder and the vacuity is filled with nonconducting substances as before described for the elevated oven.

What I claim as my invention and desire to secure by Letters Patent is—

1. The draft tube (*h*) for admitting air to the fire passing through the flue in the manner described by which the air admitted is heated before it reaches the fire.

2. I also claim the mode of securing nonconducting substances herein described applied in a plastic state and confined by ribs of metal or grating as herein described and represented.

3. I also claim the combination of the nonconducting substance forming the back of the oven and serving the usual purpose of a brick oven for absorption with the ascending pipes for heating the oven placed inside thereof.

R. D. GRANGER.

Witnesses:

J. J. GREENOUGH,  
A. P. BROWNE.