

Cooking Stove.

Patented June 20, 1838.



# UNITED STATES PATENT OFFICE.

STEPHEN J. GOLD, OF CORNWALL, CONNECTICUT, AND JOB SWIFT GOLD, OF NEW YORK, N. Y.

## MODE OF APPLYING HEAT IN COOK-STOVES.

Specification of Letters Patent No. 792, dated June 20, 1838.

*To all whom it may concern:*

Be it known that we, STEPHEN J. GOLD, of Cornwall, in the county of Litchfield and State of Connecticut, and J. SWIFT GOLD, of New York, in the county and State of New York, have invented a new and Improved Mode of Applying Heat in Cook-Stoves, which we have named the "Perfect Coal Cook-Stove"; and we do hereby declare that the following is a full and exact description of the same.

The character of our invention combines durability, economy, simplicity, and power; all of which arise chiefly, from the mode of applying the heat in the oven.

To enable others to avail themselves of our invention, we will here describe the construction of the "Perfect coal cook-stove."

*First.*—Make the side plates A thus: Let their length be twenty-eight (28) inches. One foot from the front of the stove make an angle of forty-five (45) degrees laterally in each plate, and by these lines widen the stove three (3) inches—the projection being equal on each side. Then let the plates extend to the back plate, in a line parallel with the first twelve (12) inches of these plates. At the same point where these plates are carried outward, let the upper edges rise at such an angle, that there may be an elevation of two and a half ( $2\frac{1}{2}$ ) inches over the lateral projection by which the back part of the stove will be made two and a half ( $2\frac{1}{2}$ ) inches higher than the front part—the front part being eleven (11) inches high. Now place these plates so as to make the width of the stove in front, eleven (11) inches, and in the back fourteen (14) inches.

*Second.*—Make the back plate B thus: At the distance of two (2) inches from each side plate, enlarge the stove, by making a circular part in this plate. The diameter of the circle of which this is a part, should be sixteen (16) inches.

*Third.*—Construct the bottom plate C as follows: Let it fit the side and back plates, and on each side make a hearth, that shall extend from the front, to the back of the lateral projection, and have the lateral depth of these hearths eight (8) inches—making the shape to suit the taste. In the central part of this plate make an ash-pit D. Let this be nine (9) inches wide at the top, six (6) at the bottom and four inches deep. This is the size of the ash pit from the front, back

fifteen (15) inches. At this distance raise the bottom so as to make the depth only one and a half ( $1\frac{1}{2}$ ) inches, and let the ash pit, or this sink in the bottom, then continue on to the circular part of the back plate; but let the bottom of this sink be an inclined plane, so that it shall rise to a level with the rest of the plate, when it reaches the circular part.

*Fourth.*—Cover this ash-pit and sink part thus: The first fifteen (15) inches cover with a flat plate, designated as the furnace plate. The remaining part must have a plate corresponding with the sink under it, but inverted, so that there shall be an opening through, to the circular part of the back plate. This we call the inclined plate E. In the furnace plate make a round opening, two (2) inches from the front, nine (9) inches in diameter. This is for the furnace.

*Fifth.*—Make the furnace F a cylinder, nine (9) inches high and eight (8) inches at the top—being one inch less than at the bottom. This furnace is to fit the opening in the furnace plate, with a shoulder to support it. The top must have a similar shoulder, and fit into a plate called the dividing plate. This cylinder is fluted to preserve its strength, and diminish its weight, and also to give more surface for radiating heat.

*Sixth.*—The oven plate H.—Let this be eleven (11) inches wide, and of sufficient length to extend from the circular part of the back plate, to within one inch of the furnace. Support the front part of this plate with two legs—one at each corner—and two inches high, and at the back with legs also, or by ledges on the back plate, so as to make the plate level. This is the bottom of the oven, and it should be equidistant from the sides.

*Seventh.*—Make the guard plates I. These plates form a prism with one very obtuse angle, and two acute angles. This prism rests its lower end on the oven plate, and its upper end supports the dividing plate and in the dividing plate is an opening, corresponding with the size of the prism. Through this opening, the prism is filled with fire clay or ashes, by which it is rendered more impervious to the heat. The obtuse angle of this prism is placed toward the furnace, and at the distance of one inch more or less. The front guard plate forms the obtuse angle, and the back guard plate

completes the prism. The prism should be as wide as the oven plate, and the perpendicular distance from the obtuse angle to the back guard plate should be about one and a half inches. The upper part of, either the back, or of the front guard plate—say four inches—should extend to the side plates of the stove, to prevent too great intensity of heat, in the upper part of the oven. This prism prevents things from burning in the oven.

*Eighth.*—Construct the air heaters I. These are two grates in resemblance. One is to be placed each side of the furnace, between it and the side plates of the stove, and they are to be of such size as to fill these spaces. These air heaters appear like grates turned upon one side, with the bars running horizontally, and what is the bottom of the ordinary grate, is here placed against the furnace. It will now be seen that the passage by the furnace, is between the bars of these air heaters, which are heated entirely by the furnace, and present a grate surface—the object of which is to heat the air which is made to pass the furnace. It is a philosophical principle that air is not heated much, if at all, by rays of heat, but in order to be heated, must be brought in contact with some hot body.

*Ninth.*—The dividing plate M.—This fits in between the side and back plates, and is supported by ledges on those plates, and by the furnace. The front part of it around the furnace, is to fit the same, by an opening above mentioned. The back part immediately behind the furnace rises two (2) inches, corresponding with the side plates. This plate divides the oven and space around the furnace—which we call the hot chamber—from the fire, gas, and smoke chamber over which are the boilers.

*Tenth.*—The regulator N.—In the circular part of the dividing plate, is an opening from the oven to the smoke chamber. This is closed by the regulator which slides over it, and is governed by a handle O projecting through the back plate of the stove.

*Eleventh.*—The top plate P.—This fits the whole, but in front, has an edge projecting downward one inch, and the dividing plate rises one inch to meet it. In this plate are two boiling places—one over the front of the gas chamber or furnace ten inches in diameter—and one over the back part of the gas chamber thirteen (13) inches in diameter. Back of this, and in the circular part of the plate, is the smoke pipe R.

*Twelfth.*—The door S.—This is open work for the air to enter the hot chamber.

*Thirteenth.*—The ash draw T.—The front of this closes the ash-pit, that no air may enter this way to the fire.

*Fourteenth.*—The grate U.—This is supported by ledges cast upon the sides of the

ash-pit, so that it may be slid under the furnace and withdrawn at pleasure. The grate is constructed thus: All the central part of the grate is made to drop in front, by a pin through the front of the surrounding part—the axis being at the back. The bars of this grate are curved or circular laterally—the curve being equal to the thickness of the bars. The object of this philosophically is, that when the bars, or any of them in the central part, are more expanded by the heat, they shall not be liable to strain and break the others or be broken, as in this form each bar will yield laterally, as it expands more than the others. This construction is found, by experiment, to make the grate four times more durable than when the bars are straight, and it presents an advantage over an upward curve, when it is desirable to slide it under the furnace; and in many other cases the convex form of the grate is convenient.

The stove is now complete. Let fire be made in the furnace, and the operation is as follows: Keeping the ash-pit closed in front, the draft of the stove causes the air first to enter the hot chamber through the open work of the door. It then passes the sides of the furnace and the "air heaters," next it passes each side of the prism and under the oven plate into the oven, then reaching the back of the oven in the circular part, it enters through the sink under the inclined plate, to the ash-pit, and now is ready to enter the fire through the grate—having passed this circuit, instead of entering directly to the fire, by the front of the ash-pit, in the ordinary way. It will be perceived that, as soon as the furnace becomes hot, the air is heated in passing the hot chamber. The oven is then immediately filled with hot air, at a baking temperature. If the oven be too hot, by the regulator, the hot air can be passed directly into the gas chamber. This takes the air from the furnace, retards combustion, and thus the generation of heat by the furnace, and the oven is cooled.

The following are some of the advantages of this improvement: *First*—Combustion is supported by hot air from the oven, instead of cold air, which impedes combustion, by absorbing more heat, than hot air. *Second*—All steam is carried from the oven and consumed, and fresh air is constantly circulating in the oven—making it as good for roasting as baking. *Third*—The fresh and cold air, constantly entering and passing the furnace, prevents its becoming so highly heated, as to be destroyed. *Fourth*—The oven is heated from that part of the furnace which is ordinarily of little use—the exterior. *Fifth*—There is no ashes, soot or dust passing around the oven, stopping the flue injuring the draft,

and consequently the whole operation of the stove. *Sixth*—This construction is adapted for bituminous coal, as the affluvia of the coal is not carried around the oven—in  
5 which case it gets in and impregnates the food—rendering it unpalatable. This is the only stove that remedies this evil. *Seventh*—There is no stove more simple—having but one regulator—and in no respect can easily  
10 get out of order. More advantages might be enumerated but these are sufficient.

What we claim as our invention and wish to secure by Letters Patent, is—

1. The “mode” of heating the oven by hot  
15 air. Many have heated their ovens by hot

air, more or less, but none have ever applied the hot air on the principle above described, to wit: first to the oven and then to the support of combustion.

2. We claim the “air heaters” upon the 20 principle described.

3. We claim the grate upon the principle described, when the bars are circular laterally.

STEPHEN J. GOLD.  
JOB. S. GOLD.

Witnesses:

D. G. WHEELER,  
WM. F. CLARK.