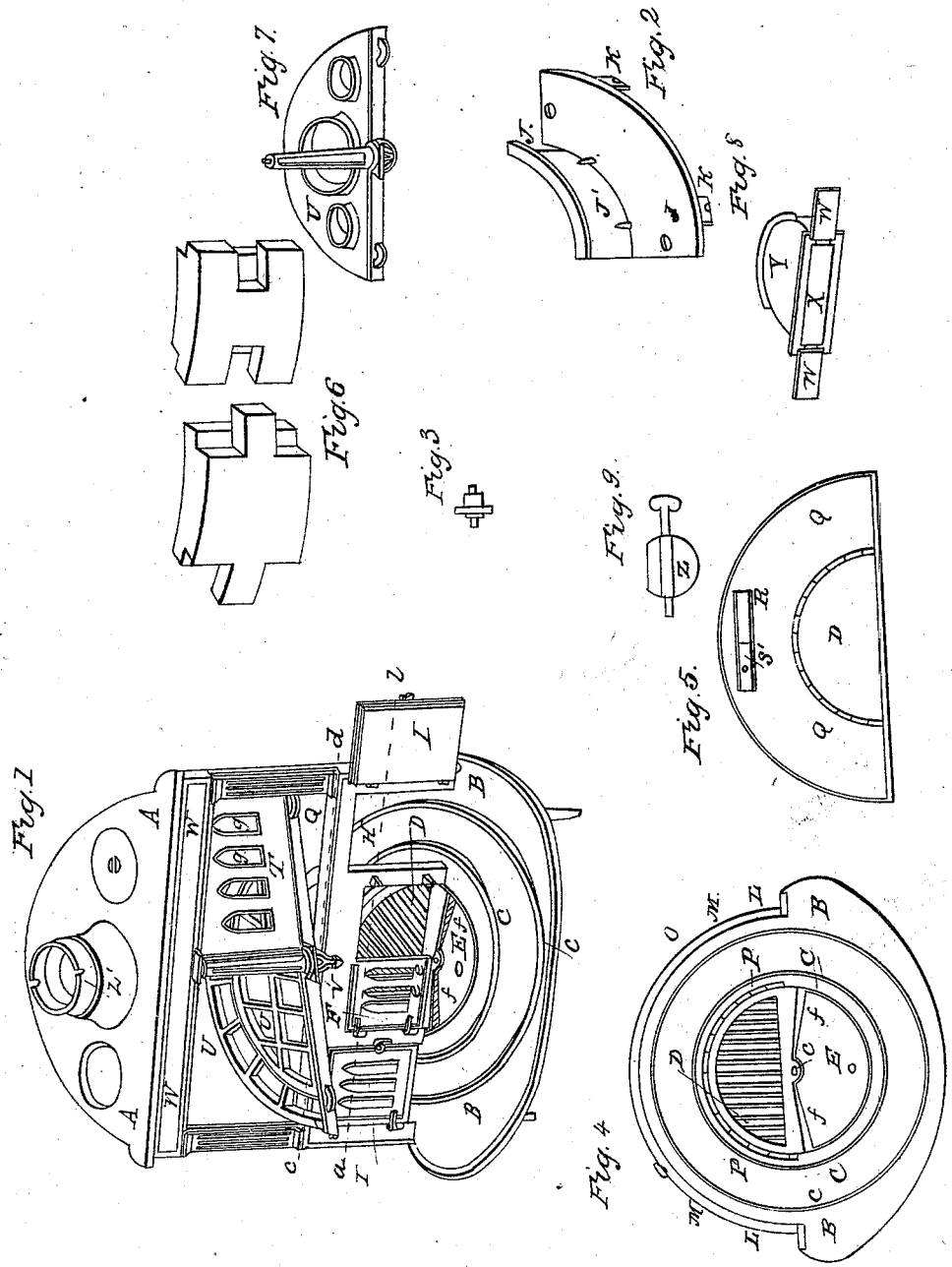
T. O. SAYRE.

Cooking Stove.

No 2,499. Patented March 23, 1842.



UNITED STATES PATENT OFFICE.

THOMAS O. SAYRE, OF ELIZABETHTOWN, NEW JERSEY.

MODE OF CONSTRUCTING COOKING-STOVES.

Specification of Letters Patent No. 2,499, dated March 23, 1842.

To all whom it may concern:

Be it known that I, THOMAS O. SAYRE, of Elizabethtown, in the county of Essex and State of New Jersey, have invented a new and useful cooking-stove adapted to the combustion of either coal or wood as fuel and which I denominate the "semicircular cooking-stove;" and I do hereby declare that the following is a full and exact description thereof.

In the accompanying drawing, Figure 1, is a perspective representation of my stove, exhibiting the principal parts concerned in its construction and operation. The whole body of the stove is semicircular, as shown by the top plate A, A, but the bottom plate, or hearth, B, B, is extended out in front in the ordinary way, and to such a distance as to have formed upon it the circular ways C, C, upon which two quadrant oven shelves, or carriages, are to run in a manner to be presently described.

D, D, are the grate bars upon which the fuel contained in the fire chamber is to be sustained. Below these bars there is a circular well, or ash-pit, into which the ashes are to fall, and which may be removed therefrom after removing a loose plate E, which covers the fore part of the circular ash-pit, and is sustained on suitable ledges. The plate of which the grate bars D, D, constitute a part, has its back edge curved to adapt it to the semicircular form of the fire-chamber, and this also rests on a ledge above the ash-pit; it consists of something more than a semicircle, its front edge projecting out under the doors F, one of which has been removed to show the interior of the fire-chamber. The plate D, has in it a square hole at G, in which to put the end of a shaker, by which it may be shaken, or rotated, when necessary. This may be done without opening the doors, and without removing the plate E, as this latter has its face sunk below the front edge of the grate plate, which can, consequently, pass to the requisite distance over it.

The semicircular portion of the fire-chamber is surrounded by a semicircular oven space H, which is to be closed by the doors I, I. This oven space is to receive two quadrant carriages, or oven shelves, J, Fig. 2. These quadrant carriages run upon friction rollers attached to their under sides; one of these rollers is shown in Fig. 3, and the bearings in which two of them run at K, K, Fig. 2. The oven space H, is divided from the fire chamber by a semicircular wall, which is formed of cast iron, and is lined within the fire-chamber in part with bricks of fire-clay, and in part with pieces of cast-iron, made in the same form with the bricks. Fig. 4, is a horizontal section of the stove through the middle of the fire chamber, or in the line *a*, *b*, of Fig. 1. L, L, is the back plate of the stove, which I prefer to make of sheet-iron, and which is received into grooves cast in the top and bottom plates. Within this semicircular back there is a second plate M, M, extending up to the height of the oven space, there being between these plates an open space O, O, of an inch, more or less. P, P, is the wall, or partition, between the fire-chamber and the oven space; the outer portion of this wall, as stated above, consists of a cast-iron plate, and the inner portion of a lining made in part of fire brick, and in part of cast-iron. Fig. 6, shows the form of two of my fire bricks, or cast-iron lining plates, on their back sides, exhibiting the manner in which they interlock, so as to keep each in place. These I make small, say of about double the size of the representation of them in the drawing; they then expand and contract freely without danger of cracking, and from their interlocking they remain permanently in their places without requiring any further provision to keep them there. The lining usually consists of three tiers of these bricks and cast-iron plates; the lower tier is of cast-iron, and the two upper of fire brick, it having been ascertained that the temperature of the oven space is thus rendered such as will cause it to operate perfectly well. The two pieces forming the end portion of the two tiers composed of fire brick, I also make of cast-iron, it having been found that a more free communication of heat is required just within the oven doors than in the more interior part of the oven space. The vertical plate J′, of the quadrant carriages J, has a part omitted, as shown at J^2, toward their front ends, which are opposite to the cast-iron lining plates, thus admitting a free radiation of heat in this part; these devices having been found necessary after the trial of numerous experiments with this stove, which, if made as described, will be found to operate satisfactorily.

Fig. 5, is a horizontal section of the stove immediately above the fire chamber, or in the line *c*, *d*, of Fig. 1. D, is the fire chamber, and P, P, the upper edge of the lining of fire brick. Q, Q, is the top plate, or roof, of the oven space. Through this plate there is an opening at R, into the oven space for the escape of vapors therefrom, which opening may be closed either wholly, or in part by a sliding cover S.

T, Fig. 1, is one half of a swinging door, the left hand half thereof having been removed for the purpose of showing the swinging semicircular grate U, U′, attached at right angles to the lower edge of the door T. This swinging door and grate revolve on gudgeons at either end of the center shaft, or column, V, said gudgeons being in the center of the curve of the back of the stove. I sometimes make the semicircular grate U, in two parts, allowing the inner part U′, to lift out, and to be replaced by one perforated for boilers, or otherwise. Fig. 7, shows a semicircular grate perforated with round holes; but rings of suitable sizes may be placed upon the grate U, for sustaining pots, or kettles, having legs; those vessels which have flat bottoms, will stand directly upon the grate, the whole surface of which may be occupied with cooking utensils.

The top plate A, A, may have boiler holes in it, as represented in the drawing, but, from the ample room within this stove, these will rarely be found necessary.

In addition to the oven space already described, a semicircular oven may be located above the swinging door; in this case, the plate W, W, of the stove will be made more elevated, and constitute the oven doors; an oven of this kind is shown detached, in Fig. 8, but upon a smaller scale than Fig. 1. W, W, are two oven doors, inclosing the oven X. Between the top plate Y, of this oven and the top plate A, of the stove, there must be a flue space, for the draft to pass over it to the exit pipe Z′; and between the semicircular wall of such oven, and the outer semicircular plate forming the back of the stove, there must, also, be a flue space for the passage of the smoke and heated air. Z, Fig. 9, is a damper intended to be placed on the exit pipe Z′, Fig. 1, and as this pipe is never to be entirely closed, the damper has one side cut off, allowing sufficient room for the escape of gas, when the fire is burning perfectly clear.

The doors F, when coal is burned, are to be rarely opened, the fuel being fed in at the top of the fire chamber, by turning the swinging door, and the coal piling up against the doors F, which constitute the front of the fire chamber. Through these doors are openings *e*, *e*, for the admission of air to the fire; and at *f*, *f*, between the plate E, and the fire grate D, there are openings of two inches, more or less, for the admission of air under the grate bars. The openings *g*, *g*, in the swinging door T, are to be furnished with plates of mica, and the fire can be seen, therefore, through these, and also through the openings *e*, *e*, in the lower doors.

Having thus, fully described the construction of my improved semicircular cooking stove, and explained the manner in which the same operates, what I claim therein as new, and desire to secure by Letters Patent, is,

1. The manner of arranging and combining the semicircular oven space H, with the semicircular chamber of combustion D, and with the quadrant shelves, or carriages, J, and the circular ways by which they are guided, and kept in place.

2. I claim the particular manner of forming the lining of the back of the semicircular fire chamber, in part with fire-brick, and in part with pieces of cast-iron, in the forms here designated, so that they shall interlock, and under the arrangement specified, by means of which the heat of the oven space will be rendered uniform, and its temperature such as to insure its perfect action.

3. I claim the manner of constructing the combined swinging door, and horizontal swinging, semicircular grate, arranged and operating substantially as herein set forth; and these parts and combinations I claim, whether made precisely in the form herein designated, or under such variations thereof as may be dictated by fancy, or by convenience, while the construction, arrangement, and operation thereof, remain substantially the same as herein set forth and made known.

THOMAS O. SAYRE.

Witnesses:

THOS. P. JONES,

THOMAS JOHNS.