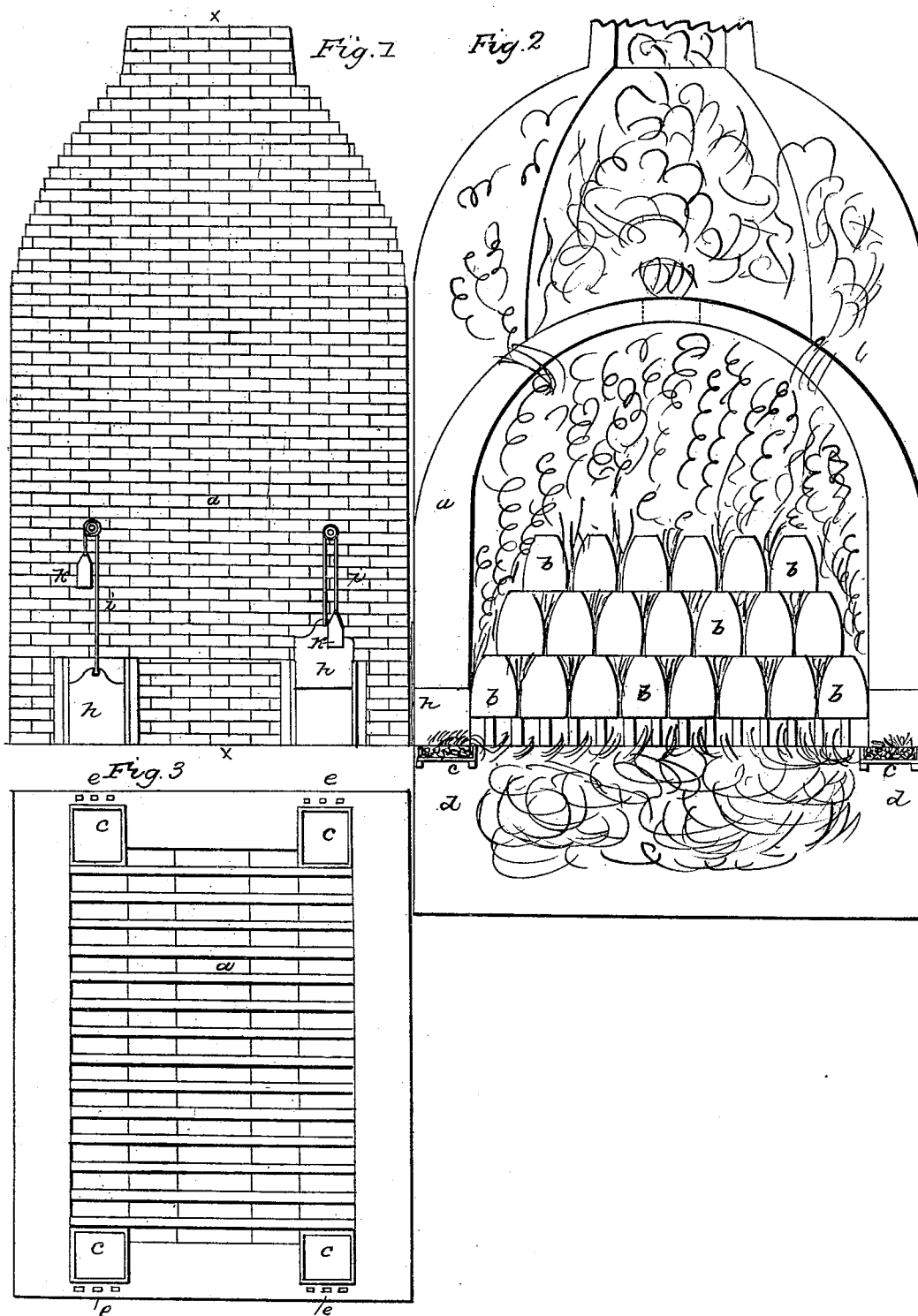


J. DIXON.

Firing Kilns for Baking Pottery.

No. 7,136.

Patented March 5, 1850.



UNITED STATES PATENT OFFICE.

JOSEPH DIXON, OF JERSEY CITY, NEW JERSEY.

FIRING KILNS FOR POTTERY-WARE, BLACK-LEAD, CRUCIBLES, &c.

Specification of Letters Patent No. 7,136, dated March 5, 1850.

To all whom it may concern:

Be it known that I, JOSEPH DIXON, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Firing Kilns for Baking Pottery, Bricks, &c., by the Use of Rosin as a Substitute for Wood or Coal, and that the following is a full, clear, and exact description of the principle or character which distinguishes it from all other things before known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—
Figure 1 is an elevation of the front of the kiln; and Fig. 2, a vertical section taken at the line (X, X) of Fig. 1; Fig. 3, a horizontal section just above the grate bars.

The same letters indicate like parts in all the figures.

Pottery and porcelain or other kinds of earthen ware require a greatly diffused heat on account of the amount of room occupied in the kiln. If the heat be not diffused, the articles near the fire, that is, at the bottom of the kiln, will be "overfired" or burned, and those at or near the top will be "slack burned," or not sufficiently baked. The only kinds of fuel heretofore used for this purpose are wood and coal, the former being preferable on account of the greater amount of flame produced by the combustion; but even with the kinds of wood that give the most flame the lower part of the kiln will be "overfired" while the upper part is "slack burned." In all kinds of fuel heretofore used for this purpose after the combustion has progressed sufficiently far to have distilled out the volatile parts there remains in the furnace a mass of incandescent coals which give out an intense heat but not a diffused heat, which over fires the lower part of the kiln. The action of oxygen on the surface of black lead crucibles in kilns is known to be injurious because of its affinity for carbon which is present in the black lead.

To avoid these objections my invention consists in substituting rosin for the kinds of fuel heretofore used for these purposes, the distillation of which readily, and at a low temperature, evolves a great quantity of highly inflammable gas which in an inflammable or inflamed state extends through all the parts of the kiln giving an equal or nearly equal heat throughout that will bake

equally, while at the same time it contains more carbon than the supporter of combustion can take up in passing through the flues of the kiln formed by the ware, and thus prevents the injurious action of the heated oxygen on the surface of the ware, particularly when baking black lead crucibles. The great advantage of this kind of fuel for this purpose is that the combustion thereof does not as with wood or coal leave a mass of incandescent coals in the furnace to overfire the lower part of the kiln.

In the accompanying drawings (a) represents the kiln, and (b) the articles of ware stacked up in it to be baked, with the flue spaces formed thereby for the passage of the flame and other products of combustion around them. At the bottom of the kiln are placed pans (c) to contain common rosin and placed over small pits (d), in which fire can be made to melt the rosin, atmospheric air being admitted to the fires in these pits through an aperture (e) in front of the rosin pans, which apertures are governed by sliding registers in any manner desired. The front and back walls of the kiln have openings, one for each rosin pan, provided with vertically sliding registers (h) suspended each to a chain (i) that passes over a pulley (j) and having a counter weight (k) hung to it, so that the attendant can by moving the registers regulate the admission of air to the inflamed rosin and thus increase or decrease the combustion as the condition of the kiln may require. Holes provided with plugs may be made in the walls leading to the main flues to enable the attendant to examine the condition of the flame within the flues.

After the articles to be baked have been arranged and the kiln properly prepared for firing, small fires just sufficient to melt rosin are made in the pits under the rosin pans, common pine rosin in lumps is put into the pans, and as it melts the gas evolved is inflamed by the admission of atmospheric air which produces flame in such quantity as to pass through all the flues formed by the ware in the kiln, and completely envelop the pottery or other articles to be baked. The intensity of the flame can be increased or decreased by means of the registers which govern the supply of atmospheric air to the inflammable gas—the greater the supply of air the more intense the flame and vice versa. The flame thus produced is so diffused as

completely to envelop the articles to be baked from the bottom to the top of the kiln, and so great is the quantity of combustible or inflammable matter in the gas thus produced that the action of the oxygen of the atmospheric air admitted is entirely cut off from the surface of the articles being baked, this, as previously stated, being highly important for black lead crucibles. Should it be desired to make a kiln very high, atmospheric air may then be admitted through vent holes near the top to inflame the gases in the upper part of the kiln, but in kilns of the size ordinarily used for baking pottery and other kinds of earthen ware this will not be necessary, as I have found that with the largest size heretofore used the flame can be carried even above the top, and give throughout the desired heat to bake equally.

I have thus shown and described the method which on experiment I have found to be the best for firing and managing pottery kilns on my improved plan, but I wish it to be distinctly understood that I do not confine myself to any particular arrangement of the kiln, as this may be variously modified, so long as the parts are so arranged as to admit of distilling the rosin and inflaming the gases evolved and carry-

ing the flame through the flues to act on the articles to be baked.

I am aware that rosin as fuel has been incidentally substituted for wood and coal in various kinds of furnaces for melting glass, &c., but I am not aware that it has ever been substituted for other kinds of fuel in baking pottery, bricks, or other kinds of earthen ware, with the view to equalize the baking and to prevent the action of oxygen on the surface of such articles to be baked as are injuriously affected by it, and therefore I do not claim generally as my invention the use of rosin as a substitute for other kinds of fuel; but

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

The use of rosin or the distillation thereof as a combustible for baking pottery and all other kinds of earthen ware substantially as described, as a means of preventing such articles from being "overfired" or "slack burned," and whereby also the injurious action of atmospheric air on the surface of black lead crucibles, pottery ware, bricks, &c., is avoided, as described.

JOS. DIXON.

Witnesses:

R. W. LOWBIN,
ALEX. PORTER BROWNE.