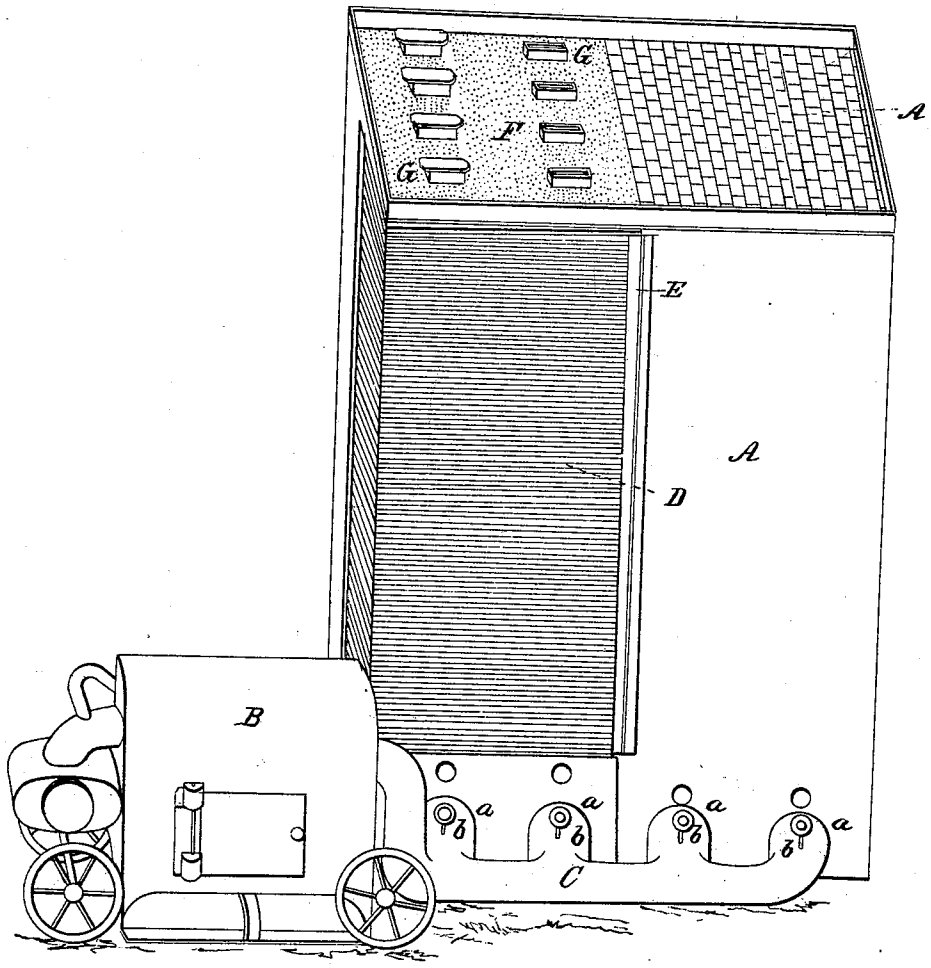
N. F. POTTER.

Brick Kiln.

No. 103,500. Patented May 24, 1870.



Witnesses:

Benj F Thurston

Peter T Hughes

Inventor:

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UNITED STATES PATENT OFFICE.

NATHANIEL F. POTTER, OF PROVIDENCE, RHODE ISLAND.

IMPROVED KILN FOR DRYING AND BURNING BRICK.

Specification forming part of Letters Patent No. **103,500**, dated May 24, 1870.

To all whom it may concern:

Be it known that I, NATHANIEL F. POTTER, of the city and county of Providence, and State of Rhode Island, have invented a new Improvement in Drying Brick; and I do hereby declare that the following specification, taken in connection with the drawing making a part of the same, is a full, clear, and exact description thereof.

The invention hereinafter described relates particularly to a method of drying bricks after they have been set in a kiln, but before they are sufficiently dry to admit of the firing of the kiln.

In the brick-manufacture as commonly conducted in uncovered yards, it is necessary to expose the clay after it has been molded for several days, varying according to the state of the atmosphere, to the drying influence of the air. Accordingly the freshly-molded bricks are spread upon the floor of the yard, and occasionally turned, until they have stiffened somewhat. They are then carefully hacked or arranged in long narrow rows of about four feet in height, piled so as to permit free circulation of air between them, and are allowed to remain in this situation, upon the average, during clear weather, of six days. When they have become sufficiently dry they are set into kilns, ready for burning.

Great losses of molded unburned bricks are occasioned every season from the occurrence of rain-storms while they are spead upon the yard and undergoing the air-drying process, and it is impracticable to cover the extent of ground required for a yard of a capacity of two hundred thousand bricks per day with suitable sheds, both on account of the cost of such structures, and because the clay flooring requires to be exposed to the direct rays of the sun.

If a kiln is set with bricks in the clay which contain too much moisture and fired, the result will be that the steam driven off from the courses nearest the tops of the arches will ascend and soften the body and upper courses, until the whole kiln tumbles into a shapeless mass.

It is well known that various methods have been tried with a view to avoiding the necessity of covered yards and the successive handling of the clay bricks, and the attendant loss by breakage. Drying-kilns of various forms, separate from the burning-kilns, have been most generally attempted. Expensive permanent kilns have been constructed having a number of compartments, the partitions being removable. In such kilns the use of railways and grate-cars is requisite to convey the stacks of brick from one compartment to another as the drying, burning, and cooling processes progress. To accomplish the drying of clay bricks without the necessity of any intermediate handling between the drying and burning, in a simple and inexpensive manner, without the necessity of separate drying or permanent kilns, railways, or grate-cars, is the object of my invention.

My invention therefore consists in stacking freshly-molded and slightly-dried clay bricks into a temporary or other kiln, as if for immediate burning, and then subjecting the stack to the action of heated or dry air, delivered under pressure within the arches, until they have been sufficiently dried to avoid the production of water, smoke, or steam, and the consequent injury to the "body" or "outer courses" of brick.

It is obvious that if the temporary kiln be not cased or "scoved" in a manner practically tight, the air will escape at the sides, retarding the drying process or imperfectly performing it. Heretofore a mortar of clay has been generally plastered upon the outer walls. As it dries it is, of course, liable to crack and open in seams. As an auxiliary requisite for the proper accomplishment of the object desired, I have invented a novel mode of "scoving" or casing the kiln, hereafter more fully described, by which the stack is inclosed within four temporary walls sufficiently close to meet the requirement.

A in the drawing represents a kiln of four arches, and which may be of any size considered practicable. It is supposed to be set in the customary way, but composed of bricks in the clay, not dry enough for burning. B represents a portable apparatus, mounted on wheels, for convenience in moving from one kiln to another. It is composed, in this instance, of a hot-air chamber, fire-box, and pressure-blower in combination. C is a pipe,

with branch outlets or nozzles *a a a*, adapted to enter the several arches of the kiln, each being furnished with a damper, *b*, to facilitate giving direction into the kiln, according to the necessities of the case, of the heated air and products of combustion which are being discharged through the pipe from the furnace and air-chamber.

I prefer to employ a furnace and hot-air chamber in combination with the blower, though I consider that during dry and clear weather a blower alone can be used to accomplish the drying operation. In case a furnace is employed, a convenient arrangement will be to use an iron shell furnished with tubes, like a locomotive-boiler, the air from the blower being forced into the shell and made to circulate through the intermediate spaces between the tubes in its passage to the outlet-pipe. The blower may be driven by a portable engine or other convenient means.

As before stated, the outside walls of the kiln are to be scoved as tight as possible, and the nozzles of the pipes, where they enter the arches, are to be made tight with clay, so as to enable the blast to exercise its best effect.

The drawing represents a section of my improved means of scoving a kiln, to be used in combination with the blowing apparatus described.

Reference being had to the drawing, my improved scoving is described as follows: D are sheet-iron plates, which are held in proper relation around the outside of the kiln by means of upright strips of iron E, which are rolled with a lip, to enable the plates to be inserted. These plates should be set off from the walls of the kiln a distance of four inches or so, and the outside courses of the bricks in the kiln should be washed with a thick yellow wash. The space between the walls of the kiln and the metal plates should be filled with sand. I prefer, also, to lay upon the top of the kiln plates of iron F, furnished with chimneys G, as shown, and cover these plates with sand to the depth of, say, four inches. By this means the kiln is so jacketed as to prevent any escape of the blast of air except at the outlets at the top of the kiln.

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

The improved kiln for drying and burning brick, provided with a close scoving and covering formed of exterior metal plates and an intermediate filling, substantially as described, in combination with apparatus for the delivery of air under pressure into the arches of said kiln, preparatory to the burning of the same, as and for the purpose specially set forth.

NATHANIEL F. POTTER.

Witnesses:

ORVILLE PECKHAM,

EDWARD C. AMES.