P. C. TAYLOR.

Lime Kiln.

No. 107,735. Patented Sept. 27, 1870.

Fig. 1. x–x

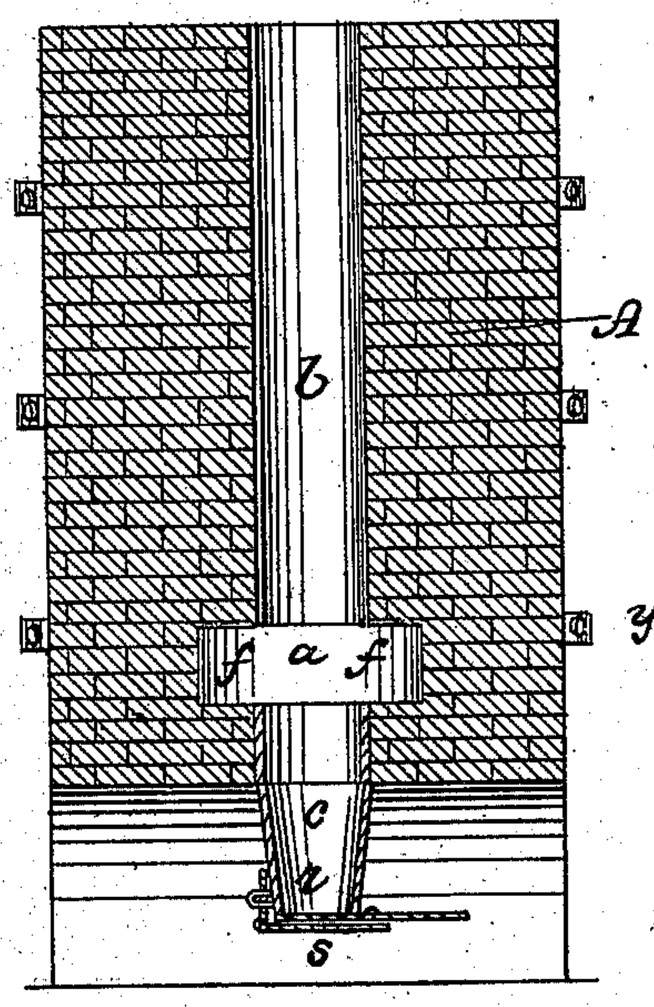


Fig. 2

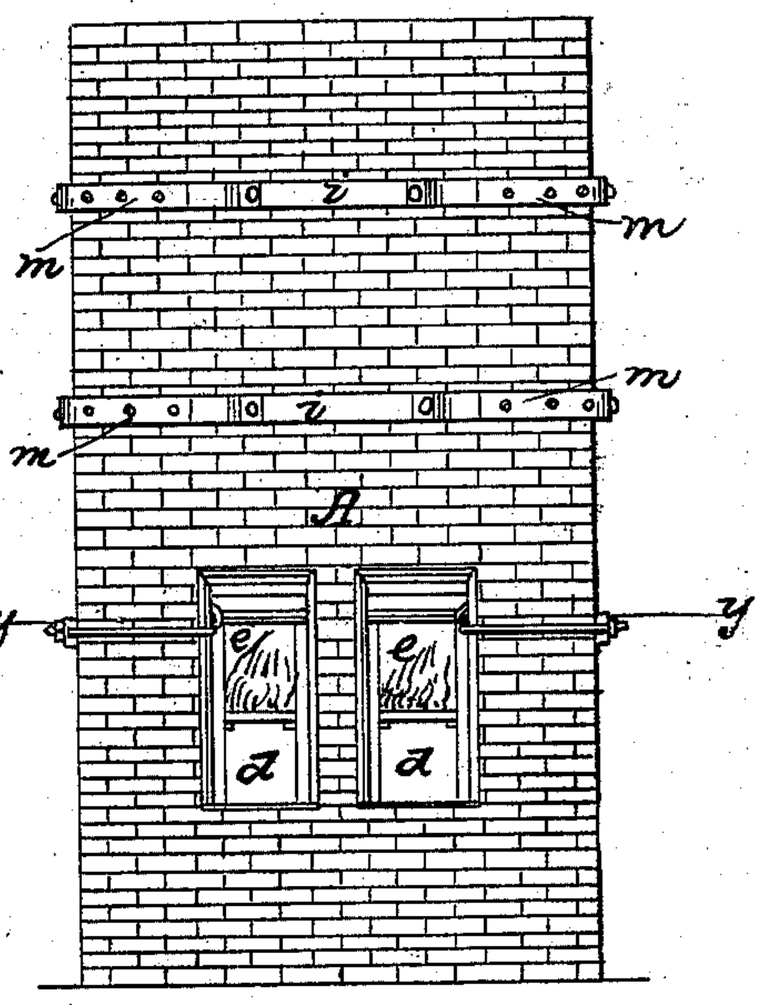


Fig. 4

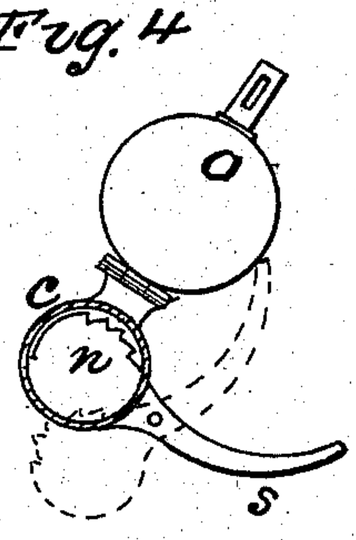
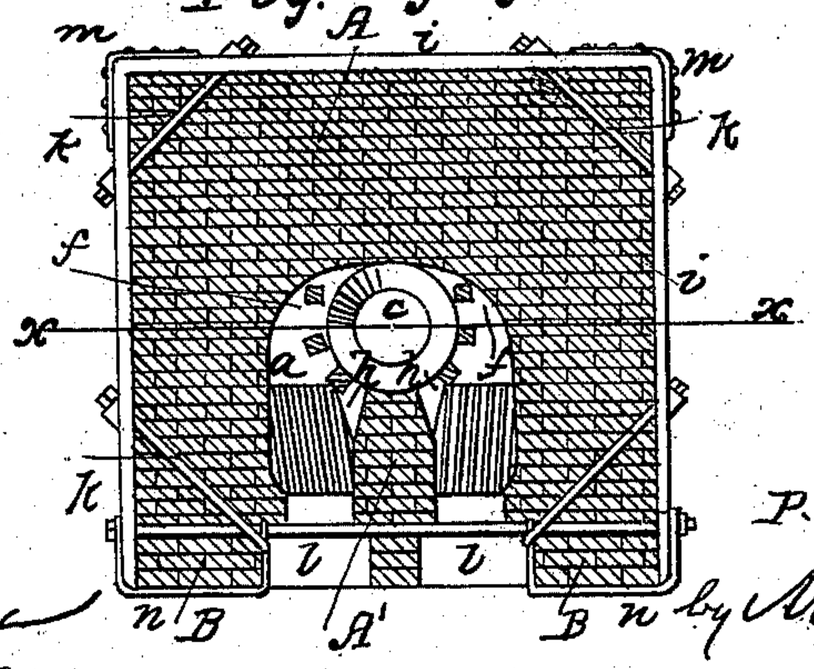


Fig. 3. y–y



Witnesses

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UNITED STATES PATENT OFFICE.

PETER C. TAYLOR, OF SAN ANTONIO, TEXAS.

IMPROVEMENT IN KILNS.

Specification forming part of Letters Patent No. **107,735**, dated September 27, 1870.

To all whom it may concern:

Be it known that I, PETER C. TAYLOR, of San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Improvement in Kilns; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a sectional elevation in the line *x x*, Fig. 3. Fig. 2 is a side elevation. Fig. 3 is a horizontal section in the line *y y*, Fig. 2; and Fig. 4 is a detached plan of the door and cut-off at the bottom of the kiln.

This invention relates especially to lime-kilns, and has for its object to strengthen the same against the disintegrating effects of the expansion of the masonry, due to the heat evolved from the combustion of fuel in the fire-chamber, and also to cut a clean section through the lime at the mouth of the discharging-funnel whenever the door of the same is to be closed after having been opened for the discharge of lime.

In the drawing, A is the masonry of a kiln. *a* is the fire-chamber; *b*, the rock-chamber; *c*, the discharging-funnel; *d d*, Fig. 2, the ash-chambers; *e e*, Fig. 2, the mouths of the fire-chamber, which are supposed to be provided with doors; *f*, Fig. 3, the vertical pillars within the fire-chamber, and beneath the rock-chamber, whose office is to separate the fuel in one chamber from the rock in the other. These pillars are arranged in a curved line, and so that the intervals *h* between the two foremost ones and the part A′ of the kiln that stands between the doors of the fire-chamber may face the said doors, so that an instrument thrust through either of the latter may be passed through the intervals *h*, and be employed in raking down the burnt rock. Heretofore, the pillars *f* have been placed in a rectangle, so that no instrument thrust through the doors of the fire-chamber could pass between the pillars, and holes are, therefore, usually made through the sides of ordinary kilns, through which the pokers may be introduced. But these holes cannot well be made as large as the mouths *e* of the fire-chamber, so that, by arranging the pillars *f* in the position described, space is gained for moving the pokers about in, and to see through. As a matter of course, the heat generated within the fire-chamber expands the adjacent masonry of the kiln, and tends to cause it to crumble, crack, and, finally, to fall to pieces and become useless. This is, in fact, one of the greatest mischiefs resulting from the present system of manufacturing lime. To remedy it I employ stout wooden beams *i i*, which are bound around three sides of the kiln, at the point where the expansion force is greatest, by means of diagonal braces *k*, passed through the corners of the kiln, and a cross-brace, *l*, passed through the front part of the kiln just above the fire-chamber, and connecting the front ends of the two side beams *i*. Iron bands *m* are bound around the beams at the corners of the kiln. The front ends of the two side beams are still more securely bound to the kiln by straps *n*, connected at their extremities to different points of the cross-brace *l*, and passing around the two front corner pillars B B of the kiln.

I have inspected many kilns with a view to noting their imperfections, and devising means to remedy them, so far as practicable. In nearly all cases I have found them giving out for lack of proper braces. I found this could not result from lack of some form, or sufficient number of braces or tie-rods, since those most completely furnished in that respect were frequently in the worst condition. I was soon led to the conclusion the difficulty lay in the arrangement of the braces or tie-rods, it being such that they were exposed for nearly their whole length to heat more or less intense. To remedy the difficulty, as also to lessen the original cost of constructing kilns, and, also, of so frequent repair by inserting new tie-rods, and rebuilding the wall, I devised this plan of arranging the braces or tie-rods at the corners of the kiln. This plan requires scarcely half the aggregate length of rods employed in other kilns, proportionally diminishes their expansion, removes them the farthest possible from the influence of heat in the fire-chamber, and yet applies their straining force to the outer beams *i* at or near their centers, where it is most required.

The discharging-funnel *c* is provided with a vertically-swinging door, *o*, Fig. 4, at its lower extremity. The door *o* is opened when lime is

to be discharged. To obviate any difficulty that might otherwise be experienced in closing the door after a discharge of lime, I provide a serrated head, *r*, Fig. 4, furnished with a handle, *s*, pivoted to an ear that projects outward from the lower end of the funnel, and operating in a horizontal slot in the side of the same. Prior to discharging lime, the head *r* must, of course, be swung open. When the door is to be closed again, the head is previously drawn across the mouth of the funnel by means of the handle *s*, the teeth of the head making a drawing cut, and removing all obstacles to the close of the door.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The improved arrangement, in a limekiln, of the diagonal braces or tie-rods *k* with the beams *i*, brace *e*, and straps *n*, as and for the purpose specified.

2. The combination of the serrated head *r*, levers *s*, and funnel *c*, as and for the purpose set forth.

3. The arrangement, in the fire-chambers *a a* of the kiln A, the same diverging radially, or nearly so, from opposite sides of the chamber *b*, and proceeding thence outwardly, in parallel lines, to the front of the kiln, of the spaces or intervals *h* and pillars *f*, all constructed substantially as and for the purpose specified.

To the above specification of my invention I have signed my hand this 2d day of June, A. D. 1870.

P. C. TAYLOR.

Witnesses:
SOLON C. KEMON,
CHAS. A. PETTIT.