M. FOSTER.

Bricks for Constructing Retorts.

No. 167,831. Patented Sept. 21, 1875.

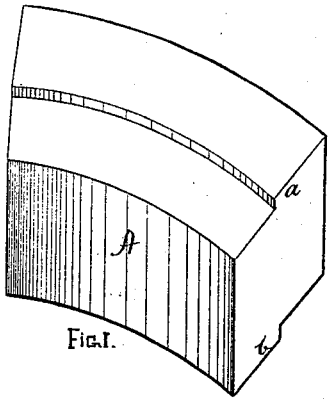

Fig. 1.

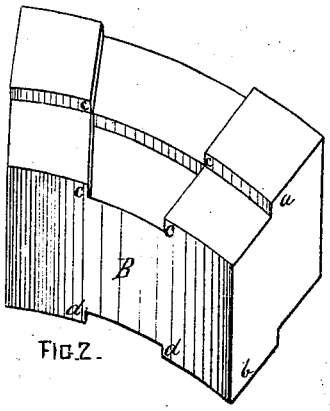

Fig. 2.

WITNESSES.

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MORRISON FOSTER, OF ALLEGHENY, PENNSYLVANIA.

IMPROVEMENT IN BRICKS FOR CONSTRUCTING RETORTS.

Specification forming part of Letters Patent No. **167,831**, dated September 21, 1875; application filed February 20, 1875.

To all whom it may concern:

Be it known that I, MORRISON FOSTER, of Allegheny city, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Bricks and Blocks for the Construction of Retorts, Flues for Hot-Blast Stoves, &c.; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a view of a block or brick illustrating the longitudinal shoulders; and Fig. 2 is a view of a second block, showing both longitudinal and transverse shoulders.

This invention relates to the form of bricks or blocks for the construction of retorts, (especially those of large size,) flues for hot-blast stoves, chimney-stacks, or hollow structures whose walls are required to withstand pressure or prevent the passage of gases; and consists in the peculiar form of the bricks or blocks used in said construction.

To avoid verbiage, I will use the term brick only, and desire to be understood to mean block as well.

The object of my invention is to enable those skilled in the art to build retorts or other above-mentioned structures of larger size than can be usefully formed in one piece, or conveniently transported from the spot of their construction; and I have devised bricks of such shapes that though many such bricks may be used in the construction the walls of such structure will be capable of resisting pressure without the aid of stays or braces, and also of preventing the passage through them of gases.

In furnaces for the deoxidation of or otherwise treating ores, where the materials treated are placed inside the retort while heat is applied externally, retorts thus constructed are especially desirable and permanent.

These bricks are curved longitudinally to suit the desired shape of wall of the retort or other structure. On one side of the brick there is a longitudinal shoulder, *d*, at the outside of the curve, and on the reverse side there is a longitudinal shoulder, *b*, at the inside of the curve. Neither of these shoulders should extend laterally quite half-way across the face of its side of the brick, the object of this precaution being to reserve a small space (say, one-eighth to one-fourth inch) for cement or mortar between the abutments of the shoulders when the bricks are in place in courses. When the retort or other structure is built perpendicular the bricks should be so laid that the side of the brick on which is the shoulder *d* is uppermost. These shoulders *d* and *b* stop the bricks from being pushed outward when in place; while the bricks, being curved, an arch is formed, which on the other hand prevents the bricks from being displaced by pressure from without. This form B of the brick, in addition to the longitudinal shoulders *d* and *b*, as in form A, has also in the sides transverse shoulders *c c* and *d d*, formed as shown, which, when the bricks are in place, hold them together longitudinally, and so key them that with the assistance of the shoulders *a* and *b*, and the curved form of the brick, the wall is securely held, as if it were of one piece.

In forming retorts or other structures with bricks of the form A it is best to lay the bricks in courses, with the joints between the ends of the bricks of one course midway of the bricks in the next course. When bricks of the form B are used this breaking of joints is inevitable.

In constructing retorts the best form ordinarily is cylindrical, especially if it be perpendicular, and the bricks should be made of such length as that a stated number of them will exactly lay one course.

I have found that, for a retort or cylinder of three feet internal diameter, twenty-seven feet high, and with bricks six inches thick, (laid only one thickness in the wall,) ten bricks to a course makes the bricks of a very convenient size for building and for being manufactured. It is obvious that when they are exposed to heat, when in place performing their work, the bricks should be made of fire-clay or other refractory material.

A thin cement of fire-clay should be used in the joints when laying the bricks, and the joints should be as close as possible. Soon after the furnace in which the retort is placed is fired up this cement and the bricks will, if care be exercised, become united together, and the walls be practically one solid piece.

I do not deem it necessary to go into a further description of any particular method of

building the retorts or other structures for which these bricks are suitable, as the forms of the bricks themselves will readily suggest to those skilled in such matters the best methods of using them.

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

1. A brick or block having convex and concave faces, and sides provided with longitudinal shoulder, substantially as specified.

2. A brick or block having convex and concave faces, and provided with longitudinal and transverse shoulders, substantially as specified.

In testimony whereof I, the said MORRISON FOSTER, have hereunto set my hand.

MORRISON FOSTER.

Witnesses:
F. W. RITTER, JR.,
W. N. PAXTON.