(No Model.) 2 Sheets—Sheet 1.

J. L. STEVENSON.

BRICK.

No. 490,726. Patented Jan. 31, 1893.

Fig. 1.

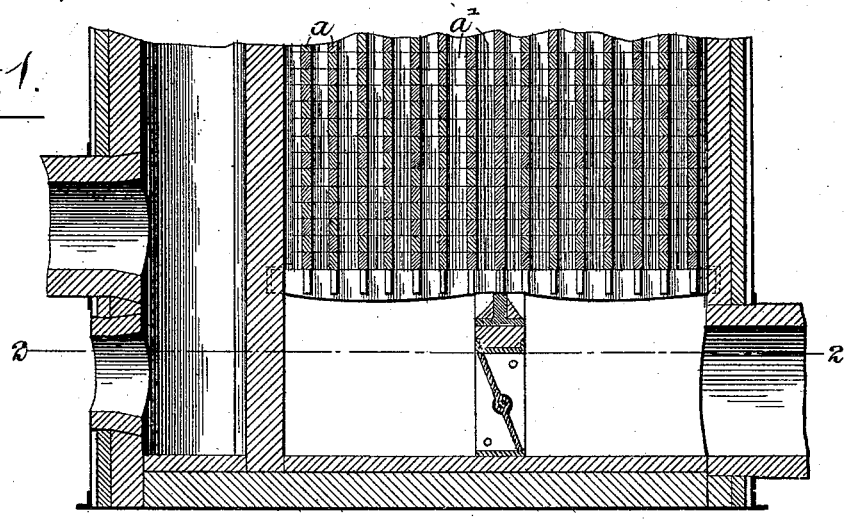


Fig. 2.

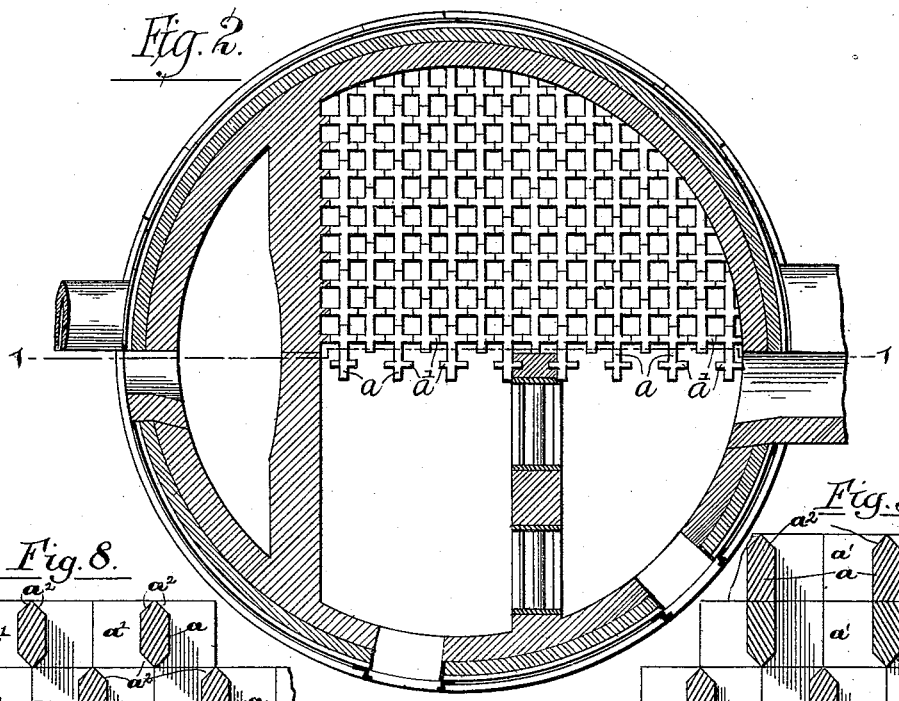


Fig. 8.

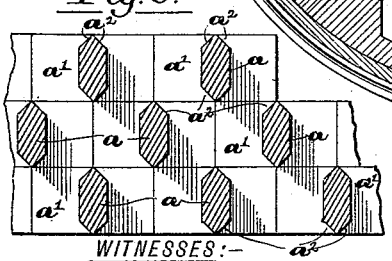


Fig. 7.

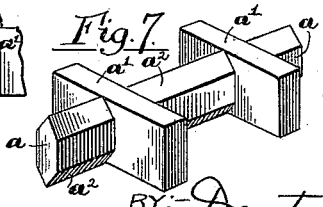
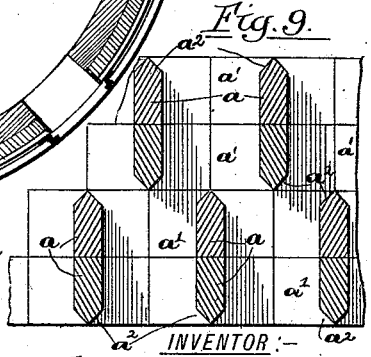


Fig. 9.



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Chas. Mead

INVENTOR:—

John L. Stevenson.

BY:— Dayton, Poole & Brown

HIS ATTORNEYS:—

(No Model.)

2 Sheets—Sheet 2.

J. L. STEVENSON.

BRICK.

No. 490,726.

Patented Jan. 31, 1893.

Fig. 3.

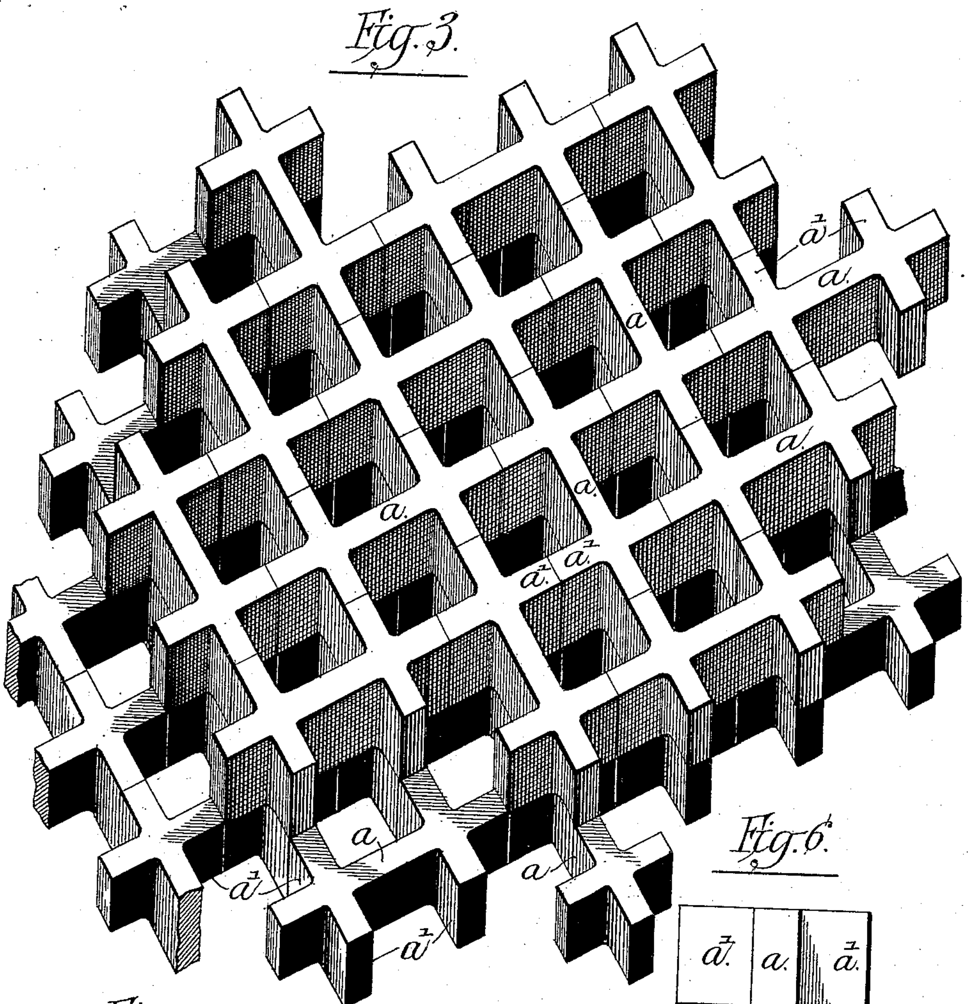


Fig. 6.

Fig. 4.

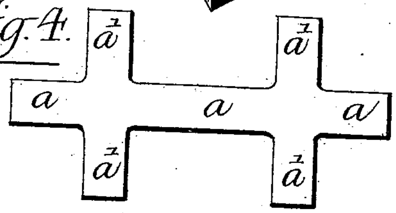
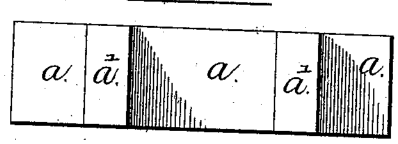


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN L. STEVENSON, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO JAMES E. YORK, OF SAME PLACE.

BRICK.

SPECIFICATION forming part of Letters Patent No. 490,726, dated January 31, 1893.

Application filed December 12, 1891. Serial No. 414,803. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. STEVENSON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Brick; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in brick and, primarily, in brick designed to form the heating bodies in hot-blast stoves of the type now commonly used for heating the air-blast prior to its admission to a blast furnace, a reverberatory furnace, or for any analogous purpose.

The object of the invention is to provide a form of brick which it shall be possible to lay in horizontal layers and in such manner that the joints between the brick of any layer will "break joints" with the brick in the layers next above and below it. This is a result not heretofore possible with any form of brick now known to the art. Heretofore when it has been desired to form a cellular structure of that kind having continuous flues from top to bottom thereof, the end has been accomplished by means of integral, ring-shaped hexagonal brick, or other regularly formed brick so laid that the joints between the edges of adjacent brick shall be continuous from top to bottom of the structure so that overlapping of the brick of adjacent layers is impossible, the only way in which the bricks so made can overlap or "break joints" being vertically, or so that the bricks in one column break joints with those of the columns of brick adjacent thereto.

The necessity of having a strong structure and one securely bound together is rendered obvious when it is considered that hot-blast stoves and the regenerating chambers of reverberatory furnaces having continuous flues, are cleaned by exploding a suitable detonating substance in the chamber below the brick work, the jar of the explosion loosening the soot and dust accumulated in the flues and causing them to fall into the chamber below.

Another advantage arising from the use of this improved form of brick is that the use of small pieces, in breaking joints and for filling, around the sides of the stove, is avoided, thus obviating the choking of the flues by the small pieces becoming loosened and falling into them and the consequent loosening of the whole wall.

The invention consists then in the peculiar form and construction of the brick used; the same consisting of a longitudinal portion, or shank, having opposite lateral projections at or near the ends thereof, and so arranged, relatively to the shank, that the brick may be laid in such manner that brick in adjacent layers may be disposed in varying positions with relation to each other, and thus secure the desired overlapping of the individual bricks.

In the accompanying drawings, forms of bricks are shown fully illustrating and setting forth this invention.

Figure 1 is a vertical sectional view of a hot-blast stove, on the line 1—1 of Fig. 2, the heating body being formed of brick embodying my invention. Fig. 2 is a horizontal, sectional view of the hot blast stove shown in Fig. 1, one half of the section being just above the top of the brick work and the other half on the line 2—2 of Fig. 1. Fig. 3 is a perspective view of a number of the bricks shown in Figs. 1, 2 and 3, laid so as to illustrate the manner in which they may be laid. Figs. 4, 5 and 6 are details of one form of my improved brick. Fig. 7 is a perspective view of a modified form of the brick shown in Figs. 1—6, adapted for a form of structure hereinafter described. Fig. 8 is a sectional view showing bricks like that shown in Fig. 7, laid in position to form an open structure. Fig. 9 shows an open structure formed of a brick differing slightly from that shown in Figs. 7 and 8.

In Figs. 1 to 6 the brick shown as embodying my invention consists of a main portion or shank a having lateral projections a' arranged on both sides thereof so as to form with said shank symmetrical double crosses. The lateral projections of the brick forming the transverse pieces of the cross are equal in length to each other and also to the length of the projection of the longitudinal part of the cross at either end beyond the transverse

part adjacent to that end, and the distance between the transverse pieces is twice as great as the length of the projections. It is obvious that brick of this form placed together in the same plane and several layers of brick being laid one on top of the other, in the manner shown in Figs. 1 and 2 of the drawings, will form vertically continuous square flues. The size of the bricks may be varied in any case, but the preferable size will be such that a flue of from seven to nine inches square will be formed. As hereinbefore indicated the width and thickness of the longitudinal and transverse parts of the brick may be varied as desired, but a desirable proportion is considered to be the following: a thickness about equal to the length of the lateral projections and a width equal to one-half of the thickness.

It is evident that, when the bricks are laid, as shown in Fig. 3, the proportion of the lateral and transverse parts must be such as will form a square flue, in case flues continuous from top to bottom are desired. If, however, the bricks are laid as shown in Fig. 2, the longitudinal parts thereof all extending one way, the length of the lateral projections relative to the length of the longitudinal portion of the brick may be such that the flue formed will be larger in one direction than the other instead of being square, without departing at all from the principle of the invention. Brick adapted to form square flues are, however, considered the preferable form, as by using that form it is possible to break joints in both directions, thus forming a stronger and a firmer wall. Nor is it the intention to limit the projections to any particular number, as they may be multiplied as desired and the principle of my invention still retained.

A modified form of the brick shown in Figs. 4, 5 and 6 is shown in Fig. 7 of the drawings, the top and bottom edges of the longitudinal part being beveled, as shown at a^2. This form of brick is intended for use, principally, when, in place of small square, or rectangular, unobstructed and continuous flues, it is desired to form a structure which will be divided throughout by parallel walls extending continuously from top to bottom thereof and separated by open spaces. In this form of structure the brick are so laid that the lateral projections thereof will form the walls; the longitudinal portions extending across the open spaces between the walls in such manner that said longitudinal portions of the brick of any layer will be over the middle of the spaces between the similar parts of the brick in the layers next above and below it. By this form of construction, the passage of the gases and also of the air-blast, through the stove, will be somewhat retarded and they will so circulate among the brick forming the structure as to insure thorough heating of the brick by the gases, and of the air-blast by the brick. The edges of the brick against which the air and gases strike are beveled so that they will offer less resistance to the passage thereof, and will not present any horizontal surfaces to receive and retain dust or soot.

The use of small pieces in the wall is avoided by the use of half brick in the following manner: When the use of a whole brick at the end of any row would leave a space between it and the wall, which would necessitate the use of a piece to complete the row, a half brick is placed in the row instead of a whole brick, which will leave a space between the end thereof and the wall shorter than the length of a whole brick. This space is then filled without the use of pieces, by trimming a whole brick to fit therein.

Fig. 9 illustrates a brick differing somewhat from that shown in Fig. 7. In this case the longitudinal parts of the brick are beveled at one edge and square on the other edge; the brick being laid with the square edges together, in the manner shown. In this case, obviously, the bricks in two adjacent layers are arranged one directly over the other, so that the vertical joints in adjacent layers are opposite each other.

The form of brick herein shown and described, to wit, that shown in Figs. 1 to 6, obviously possess in common the feature of similar lateral projections at both ends, which, when the bricks are laid in a manner to form continuous vertical flues, constitute, with the middle part or body of the brick, the walls of the flues, and which, by reason of the similar shape at both ends of the brick, enable the latter to be laid with their ends overlapping, or so as to "break joints," as hereinbefore described, when the lateral projections are at right angles to the body, as seen in Figs. 1 to 6.

The form of brick having lateral projections at right angles to the body thereof is of special advantage for building square flues or for building open structures such as are shown in Figs. 8 and 9, and this particular form being in itself novel, is also herein claimed as part of my invention.

It will, of course, be understood that the form of brick shown in Fig. 1 may be used in building an open structure, such as is shown in Figs. 8 and 9, the beveling of the connecting parts of the bricks not being essential.

I claim as my invention:

1. A brick for the purpose described, provided on each side with two lateral projections arranged at right angles to the body of the brick at points midway between the middle and the ends of the same, substantially as described.

2. A brick for the purpose described, provided with lateral projections arranged at right angles to the body of the brick at points distant from its ends, the length of said lateral projections being equal to the distance from the same to the ends of the brick, substantially as described.

3. A brick for the purpose described, pro-

vided with lateral projections at its ends arranged at right angles to the main part or body of the brick, the length of said projections being equal to the distance of said projections from the ends of the brick, and the distance between the projections being equal to twice their length, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

JOHN L. STEVENSON.

Witnesses:
M. E. DAYTON,
TAYLOR E. BROWN.