H. R. STRAIGHT.

WALL FOR BRICK KILNS.

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1,360,245. **Patented Nov. 23, 1920.**

Fig. 3.

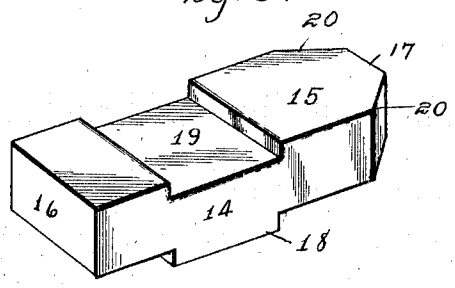


Fig. 2.

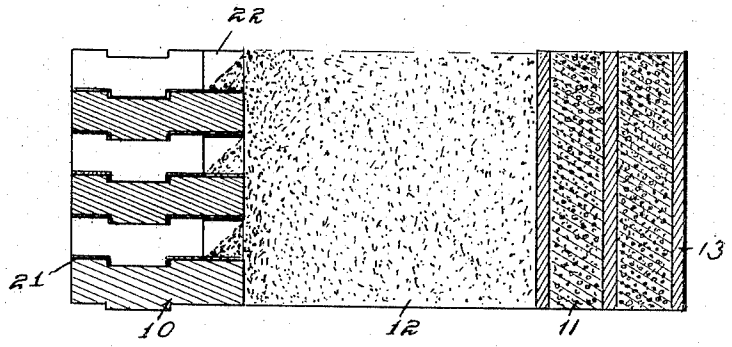
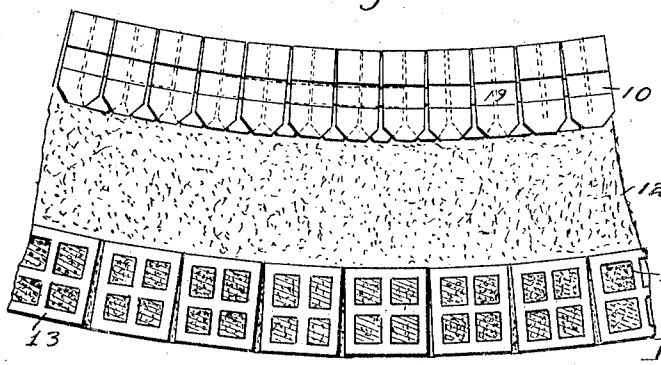


Fig. 1.



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To all whom it may concern:

Be it known that I, HALVER R. STRAIGHT, a citizen of the United States, residing at Adel, in the county of Dallas, State of Iowa, have invented Improved Walls for Brick-Kilns, of which the following is the specification.

This invention pertains to wall construction for brick or tile kilns, and particularly those of the round type with crowned roofs. In kilns of this type, the walls are usually built of a series of super-imposed layers of brick, each layer being formed or built of a series of concentric courses laid in mortar or cement. The courses are arranged in such a manner as to interlock each other at certain intervals, thereby forming substantially a rigid and solid wall of considerable thickness, the wall being built thick to prevent a waste of heat and to carry the strain produced by contraction and expansion. In burning ware inside of the kilns, the temperature is necessarily raised to a larger degree, causing the inner courses of the walls to become heated to a high temperature, while the outer courses are comparatively cool. The inner courses cool every time the kiln is emptied, thereby producing an unequal expansion between the inner and outer faces of the wall, which will cause them to become warped and broken down.

The object of my invention is to provide a new and improved wall for brick or tile kilns of simple, durable and inexpensive construction particularly adapted to withstand successive heating and cooling without injurious effect thereto.

A further object is to provide a brick of improved shape or form particularly adapted to be used in wall construction for brick and tile kilns.

A still further object is to provide in wall construction of brick and tile kilns, having an inner and outer wall filled with a loose material between them, improved inner wall construction.

I obtain these objects by the construction illustrated in the accompanying drawings in which:

Figure 1 is a horizontal sectional view taken through a segmental portion of my wall showing one of the layers of the inner wall in plan.

Fig. 2 is a vertical sectional view of a segment of my improved wall showing the manner in which the loose insulating material engages the wall members.

Fig. 3 is a perspective view of one of my improved bricks.

Similar numbers refer to similar parts throughout the several views.

In my improved wall construction, I have provided an inner wall 10, an outer wall 11 and an insulating filler 12. The outer wall 11 is formed of a series of hollow tile blocks 13 set on their ends and laid adjacent in a circular row, the hollow portions and spaces between the blocks being filled with concrete. A solid wall is thereby formed, the hollow blocks being for the purpose of providing a form for the concrete. The inner wall 10 is formed of a series of super-imposed layers of bricks, one of the bricks being illustrated in Fig. 3 of the drawings. This brick is formed of plastic material burned and is provided with substantially parallel sides 14, faces 15 and ends 16 and 17. The lower face 15 is provided with a transverse rib 18, substantially midway between its ends. The upper face 15 is provided with a transverse groove 19, slightly wider than the rib 18 and opposite thereto. The end 17 is considerably longer than the end 16 for the purpose of having its vertical corners beveled at 20, the width of the end 17 being substantially equal to one-half the width of the end 16.

It is understood, however, that the width of this end may be considerably greater or less than shown in the drawings without departing materially from my invention.

These bricks are laid in layers in a circular row inside of the outer wall already described, with their pointed ends 17 outward toward the outer wall. Each of the layers are provided with a motor joint 21 between them. The bricks are laid with their edges toward each other and spaced slightly apart, as clearly shown in Fig. 1 without mortar or cement between them. This is for the purpose of permitting the bricks to expand without increasing the diameter of the wall. The ribs 18 of the upper layers enter the grooves 19 of the next layer beneath, and are for the purpose of preventing the bricks moving transversely relative to the wall, the bricks of each alternate course being laid midway between

those of their adjacent courses to break joints. By this arrangement it will be seen that a series of pockets 22 will be formed in the outer face of the inner wall on account of the ends 17 overhanging the spaces formed by the beveled corners 20. These pockets are for the purpose of receiving a portion of the loose filler 12. The filler 12 may be of a heat insulating material such as dried ashes or loose asbestos and is for the purpose of forming a tight joint to prevent the escape of gases or the passage of air through the spaces between the edges of the bricks of the inner wall. When the kiln is heated, the bricks of the inner wall will expand transversely, the said expansion being taken up by the spaces between them, the wall also will be moved vertically due to the expansion. This vertical movement will cause the projecting ends 17 of the bricks to be slightly elevated, the projections of the material 12 will be carried upwardly with them, at the same time sealing the space that has been displaced by the movement of the bricks. If the outer face of the wall is perfectly smooth, the bricks would lengthen when heated, moving the filler toward the outer wall, causing a space between the filler and the inner wall when the bricks had cooled and contracted.

It will also be seen that any space formed by the movement of the bricks relative to each other, will be filled by the loose material thereby, always keeping a tight joint between the bricks and the filler. The high temperatures to which these kilns are brought generally melt the inner ends of the bricks. This might cause the inner corners to be slightly fused together but they would be broken apart when the bricks contract without seriously warping or injuring the wall.

Thus it will be seen that I have provided a wall of comparatively simple and inexpensive construction, which is capable of withstanding successive heating and cooling without materially injuring it. It will be seen that on account of the inner wall being made of one course of brick, the temperature between the inner and outer faces of the wall will be comparatively equal, while in walls that are formed of a series of courses of brick of considerable thickness the difference in temperature between the inner and outer wall is so great that the expansion of the inner wall will break and loosen the joints of the outer wall and also warp it. The outer wall, in my construction, will not be materially heated, the difference in expansion between the two walls being taken up by the loose material between them.

I claim:

1. A kiln wall, formed of an inner and an outer wall and a loose yielding filler between them, the inner wall being formed of a series of loosely laid bricks having their outer ends pointed or beveled, the said bricks being laid in staggered relation relative to each other, and the outer wall being formed solid.

2. A wall for brick or tile kilns comprising an inner and an outer wall, the inner wall being formed of a series of super-imposed layers of spaced bricks so constructed and arranged to form pockets in its outer face, and a loose filler between the inner and outer walls, for the purpose stated.

3. A wall for brick and tile kilns comprising an inner and an outer wall, the said inner wall being formed of slightly spaced bricks and having its face provided with pockets and a yielding filler between the said inner and outer walls.

4. A wall for brick and tile kilns comprising an inner and an outer wall, the inner wall being formed of a series of super-imposed courses of spaced bricks so arranged as to form pockets in its outer face and having its inner face comparatively smooth, each brick being provided with grooves and ribs to prevent longitudinal movement relative to each other, and a loose filler between the inner and outer walls.

5. A wall for brick and tile kilns comprising an inner and an outer wall, the inner wall being formed of a series of super-imposed courses of spaced bricks so arranged as to form pockets in its outer face, each brick being provided with grooves and ribs to prevent longitudinal movement relative to each other, and a loose filler between the inner and outer walls.

6. A wall for brick or tile kilns comprising an inner and an outer wall, the inner wall being formed of a series of super-imposed layers of bricks, each layer being laid in mortar or cement and each brick in the layer being spaced slightly apart without mortar, the said bricks being provided with ribs and grooves to prevent longitudinal movement relative to each other or transverse movement relative to the wall and having their outer vertical corners beveled, the bricks of one layer being arranged in staggered relation to those of an adjacent layer, and a loose heat insulating material between the inner and the outer wall.

HALVER R. STRAIGHT.