

No. 758,852.

PATENTED MAY 3, 1904.

F. C. ROBERTS.
JOINT FOR BRICKWORK OF FURNACES, &c.
APPLICATION FILED JUNE 17, 1903.

NO MODEL.

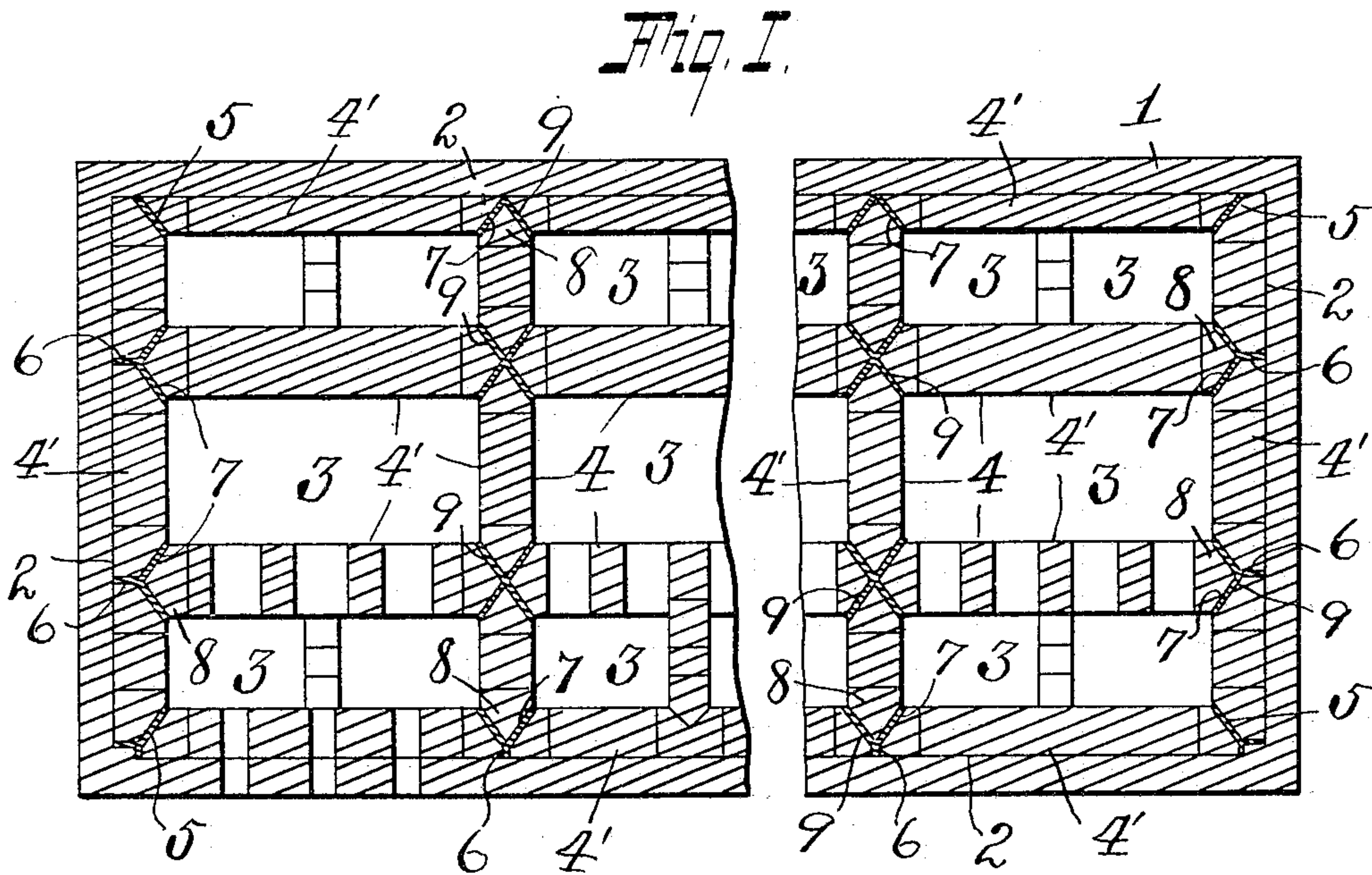
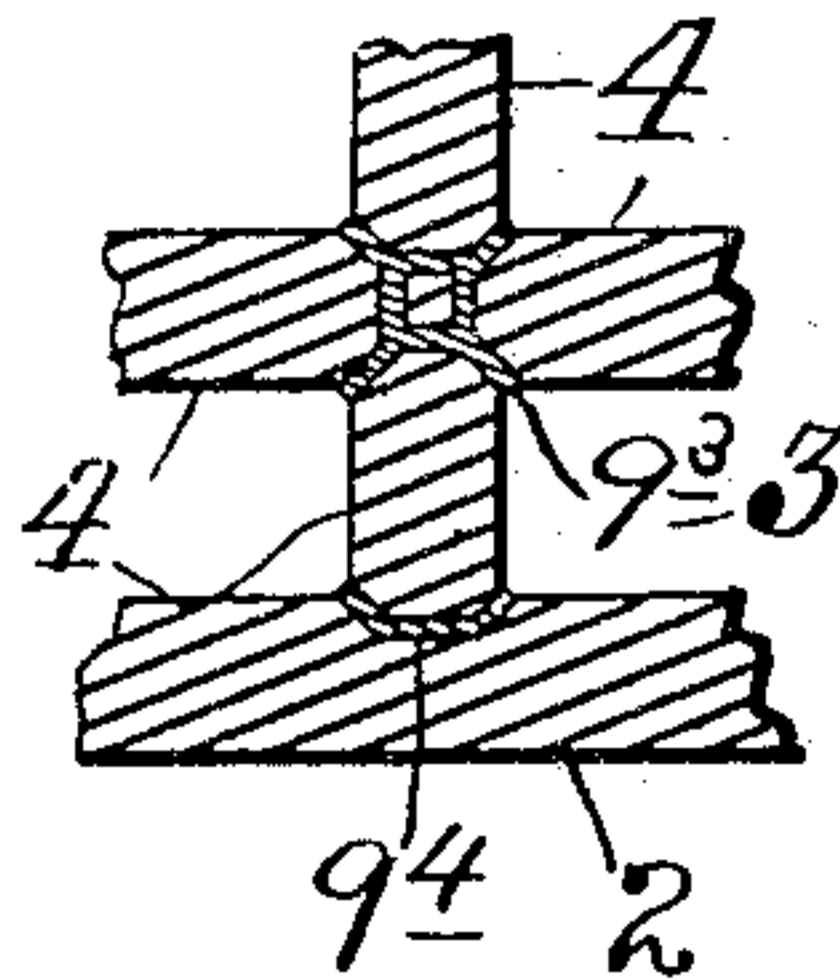
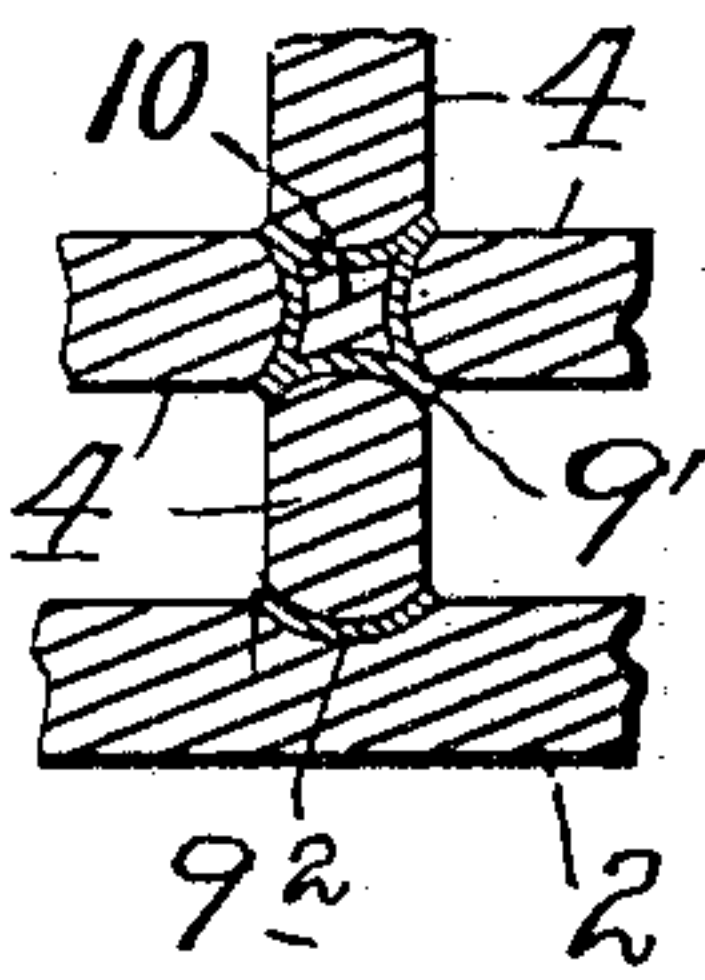
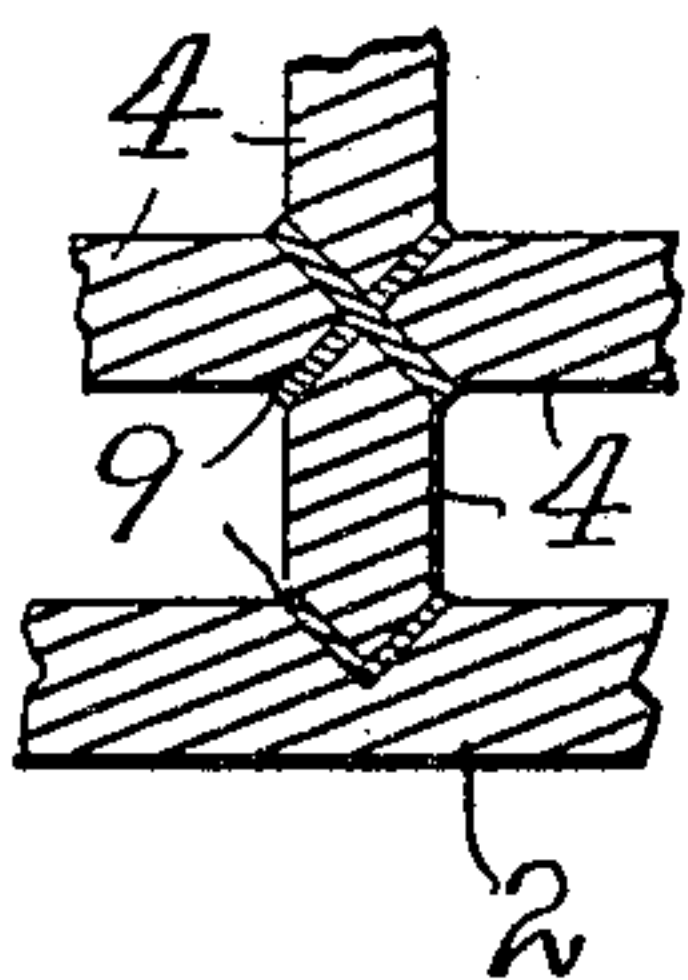


Fig. II.

Fig. III.

Fig. IV.



WITNESSES

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UNITED STATES PATENT OFFICE.

FRANK CALVIN ROBERTS, OF PHILADELPHIA, PENNSYLVANIA.

JOINT FOR BRICKWORK OF FURNACES, &c.

SPECIFICATION forming part of Letters Patent No. 758,852, dated May 3, 1904.

Application filed June 17, 1903. Serial No. 161,765. (No model.)

To all whom it may concern:

Be it known that I, FRANK CALVIN ROBERTS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented or discovered new and useful Improvements in Joints for Brickwork of Furnaces, Roasters, and the Like, of which the following is a specification.

In the accompanying drawings, which make part of this specification, Figure I is a horizontal section of a brickwork construction, showing various forms of bricks, joints, flues, and chambers without attempting to illustrate any particular complete structure. Figs. II, III, and IV show modified forms of joints.

My invention relates to the construction of joints for brickwork which is formed into flues or chambers, or both, conveying or containing gases or other material at a high temperature.

The object of my invention is to provide joints for flues and chambers which will permit the expansion of the brickwork without cracking or injuring the same.

The joints formed by intersecting walls of checker-work, ore-roasting chambers, or other flues and chambers which are subjected to high and varying temperatures are as usually constructed made without any provision for the expansion of the walls or at best without any adequate provision for the same, the result being that the walls are soon forced out of their original position and the whole structure is weakened or destroyed. I provide at all the joints for the expansion of the walls by inserting during the building of the furnace, roaster, or other structure perishable fillers of wood or other material between the opposing faces of the bricks which form the joints. When the structure becomes heated, the fillers char or burn out, and thus expansion is allowed to take place without distorting or weakening the brickwork.

The drawings do not show a connected and operative set of chambers, but are intended merely to show several varieties of bricks required to form the joints. To facilitate description, I will, however, call the structure shown in the drawings a "furnace."

Referring to Fig. I of the drawings, 1 designates the outer furnace-wall, which may be

of any construction, as the same is not a part of the present invention. The wall 1 has a brick lining 2. The interior of the furnace is shown divided into a number of chambers 3 by means of the cross-walls 4. The lining and cross-walls are shown made of three-section bricks 4', whose opposing ends form the diagonal corner-joints 5 and the side joints 6, which are at right angles to the wall 1. The lining is provided with V-shaped recesses 7, the corners of adjacent bricks being beveled to form the V's, whose angles may reach to the wall 1, as shown at the top of Fig. I, or to the joints 6. Seated in the recesses 7 are the wedge-shaped ends 8 of the bricks forming the cross-walls 4. Where four cross-walls meet to form a joint, the four wedge-shaped ends of the bricks form an X-shaped joint, the wedge ends of the bricks obviously preventing lateral movement of bricks in the intersecting walls. In constructing the furnace-walls the opposing portions of the bricks which form the joints are spaced apart by interposed thin fillers 9 of wood or some other material which may be compressed or will shrink, char, burn out, or waste away when the furnace becomes hot. The fillers may be composed of thin pine or other wood or of other material which will allow expansion to take place without distorting the brickwork.

Fig. II shows joints where the ends of the bricks have their faces at an angle of forty-five degrees.

In Fig. III the ends of the bricks are rounded. The space inclosed by four meeting walls contains a filling 10 of brick separated from the rounded ends of the bricks of the cross-walls 4 by the filler 9'. Curved fillers 9² space the cross-walls from the lining.

In Fig. IV the brick ends have their corners beveled, the portion between the beveled corners being at a right angle to the sides of the bricks. The four meeting ends of the bricks leave a space which contains brick separated from the brick ends by the filler 9³. The cross-walls are spaced from the lining by the fillers 9⁴.

The drawings by no means exhaust the possible varieties of joints with which my wooden or other compressible fillers may be used.

I believe I am the first to use a compressi-

ble, contractible, perishable, or other filler between the joint-forming portions of furnace or like structures which will permit expansion of the walls without injury to the same.

5 The word "combustible" used in the claims does not express any theory as to the ultimate state of the fillers, but only their characteristic before use. The fillers are capable of burning or charring to a greater or less degree. In some cases they may burn entirely
10 away; in others they may char or partially burn away, and so shrink or become compressible. They may be of carbonaceous material largely composed of non-combustible material, but having sufficient carbon to cause
15 the filler to partially burn away or shrink or become compressible.

Having described my invention, I claim—

20 1. In a furnace or other structure subjected to high temperatures, a wall containing bricks, and combustible fillers between the adjacent ends of the bricks which form the joints, the spaces occupied by the fillers taking up the longitudinal expansion of the wall.

25 2. In a furnace or other structure subjected

to high temperatures, intersecting walls forming joints, the members of the joints so shaped as to mutually prevent lateral movement of the walls, and combustible fillers between the adjacent ends of the bricks which form the
30 joints, the spaces occupied by the fillers taking up the longitudinal expansion of the walls.

3. In a furnace or other structure subjected to high temperatures, brick walls arranged to form flues or chambers, and fillers of com-
35 bustible compressible material between the faces of the bricks which form the joints.

4. In a furnace or other structure subjected to high temperatures, brick walls arranged to form flues or chambers, and fillers of wood
40 between the faces of the bricks which form the joints, the said fillers charring or burning out in the use of said furnace or structure and so providing for the expansion of the walls.

Signed at Philadelphia, Pennsylvania, this
15th day of June, 1903.

FRANK CALVIN ROBERTS.

Witnesses:

L. KRYDER LOCHMAN,
RANDOLPH H. MILLER.