O. PIETTE.

HEAT RECUPERATOR FOR AIR OR GAS.

APPLICATION FILED NOV. 6, 1918.

1,378,130. Patented May 17, 1921.

Fig. 1.

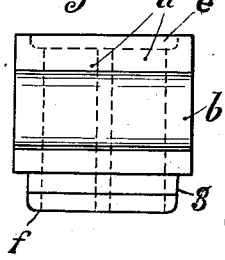
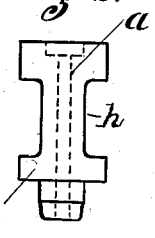


Fig. 2.



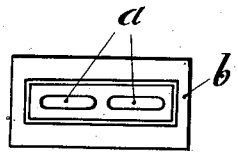


Fig. 3.

Fig. 4.

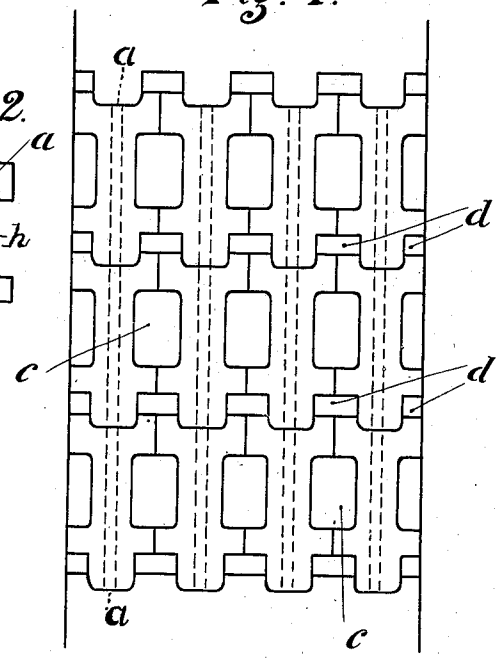
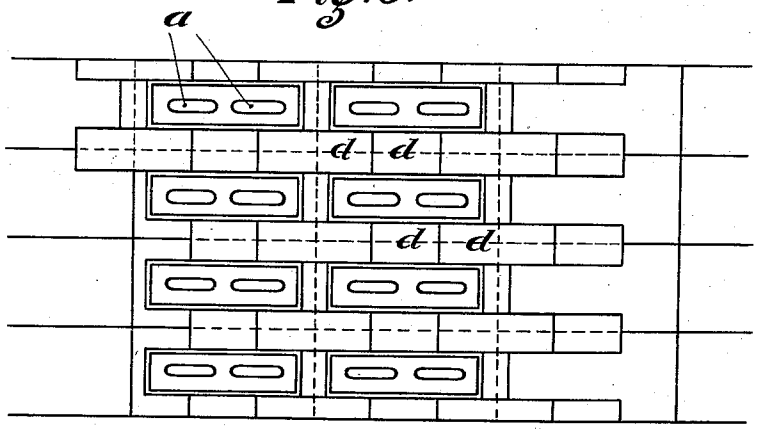


Fig. 5.



Witnesses:

Inventor:

per

Attorney.

UNITED STATES PATENT OFFICE.

OLIVIER PIETTE, OF BRUSSELS, BELGIUM, ASSIGNOR TO THE SOCIETE FRANCO-BELGE DE FOURS A COKE, OF PARIS, FRANCE.

HEAT-RECUPERATOR FOR AIR OR GAS.

1,378,130. Specification of Letters Patent. Patented May 17, 1921.

Application filed November 6, 1918. Serial No. 261,422.

To all whom it may concern:

Be it known that I, OLIVIER PIETTE, a subject of the King of the Belgians, and resident of Brussels, Belgium, at present carrying on business at Paris, France, have invented certain new and useful Improvements in Heat-Recuperators for Air or Gas, of which the following is a specification.

The present invention relates to an improved heat-recuperator for air or gas, said recuperator being formed of fire-clay and allowing an exchange of temperature to take place between two gaseous or fluid currents.

The object of this invention is to provide a construction such that the joints of a special brick forming the circuits for the currents of air or gas shall be gas tight, each brick constituting a tubular section and being so formed that when a number of them are properly superimposed there shall be only horizontal joints in the vertical circuit, such joints being, however, other than continuous plane surfaces.

In the other circuit the joints are at right angles to the joints of the first circuit; and substantially all of these joints are like those of the vertical circuit, "broken."

In the accompanying drawings Figure 1 is a view in elevation of one of the special bricks.

Fig. 2 is a view in end elevation of Fig. 1.

Fig. 3 is a plan view of Fig. 1.

Fig. 4 is a view in elevation showing the method of assembling the brick to form a recuperator.

Fig. 5 is a plan view of Fig. 4.

In the recuperator construction shown for the purpose of illustrating the invention, the passages *a*—*a* comprise the circuit for one gas or fluid while the passages *c*—*c* comprise the circuit for the other gas or fluid and *d* indicates a slab (whose general outlines are shown in Figs. 4 and 5) which breaks the continuity of the vertical joints which would otherwise occur in the vertical line between flues *c*.

Figs. 1 to 3 show the details of the special recuperator brick *b* in the top surface of which there is a depression *e*, the lower portion of the brick being contracted as shown at *g* and *f*; portions *g* being adapted to allow the slab *d* to be positioned between the recuperator blocks (as shown in Fig. 4) and the portion *f* to project into and fill the depression *e*. Lateral depressions *h* are provided in the sides of the block *b*, such depressions being adapted to form the flues *c* when blocks *b* are assembled to form a recuperator.

It will be evident from the above description that there are no joints constituted by one plane surface passing between the flue systems, all joints being broken in one or more places. In other words, all joints are broken in such manner that the line of cleavage between adjacent bricks lies in a plurality of different planes and the path of leakage along the joints from the horizontal flue to a vertical flue is in all cases tortuous.

In the preferable operation of my invention the preheating fluid passes downwardly in flues *a* and the fluid or gas to be heated passes horizontally through the flues *c* thus permitting an interchange of heat.

Various changes may be made in the details of construction without departing from the scope of my invention as set forth in the appended claims as, for instance, the heating medium may be passed through the horizontal flues while the fluid or gas to be heated may be passed through the vertical flues.

What I claim as my invention and desire to secure by Letters Patent of the United States is:—

1. A brick for furnace construction, having two of its opposite faces formed with laterally-projecting flanges extending longitudinally of the brick to form channels in said faces, one of the other two faces of the brick being a substantially plane surface with a depression therein the margins of which lie within the boundaries of said face, and the face opposite said last-named face having a projection extending a greater distance therefrom than the depth of said depression but its other dimensions substantially corresponding with those of said depression, and a duct extending completely through the brick between said depression and said projection.

2. A heat recuperator comprising a plurality of bricks and slabs, vertical and horizontal ducts leading through said composite structure, each brick having laterally projecting flanges which with corresponding flanges of adjacent bricks constitute one of said duct systems, each brick also having a depression and a correspondingly shaped

projection located on opposite ends of the brick, the projection extending farther in an outwardly extending direction than the depression extends in an inwardly extending direction, which said depressions and projections, placed with corresponding depressions and projections, form recesses at the points where the brick flanges come together, said recesses being filled with said slabs, each brick having a duct passing therethrough originating within the said depression and passing through the said projection at the opposite end of the brick to constitute with other bricks of the same conformation the other one of the said duct systems.

3. A heat recuperator comprising a plurality of bricks and slabs, vertical and horizontal ducts leading through said composite structure, each brick having laterally projecting flanges which with corresponding flanges of adjacent bricks laid in broken joint arrangement constitute one of said duct systems, each brick also having a depression and a correspondingly shaped projection located on opposite ends of the brick, the projection extending farther in an outwardly extending direction than the depression extends in an inwardly extending direction, which said depressions and projections, placed with corresponding depressions and projections, form recesses at the points where the brick flanges come together, said recesses being filled with said slabs, the slabs being laid to cover the broken joints in the said broken joint arrangement between lines of bricks, each brick having a duct passing therethrough originating within the said depression and passing through the said projection at the opposite end of the brick to constitute with other bricks of the same conformation the other one of the said duct systems.

In witness whereof I have signed this specification in the presence of two witnesses.

OLIVIER PIETTE.

Witnesses:

PAUL GOFFARD,

ALEXIS V. CENFESEUR.