E. BENDER.

REGENERATOR.

APPLICATION FILED AUG. 13, 1909.

952,723. Patented Mar. 22, 1910.

Fig. 1.

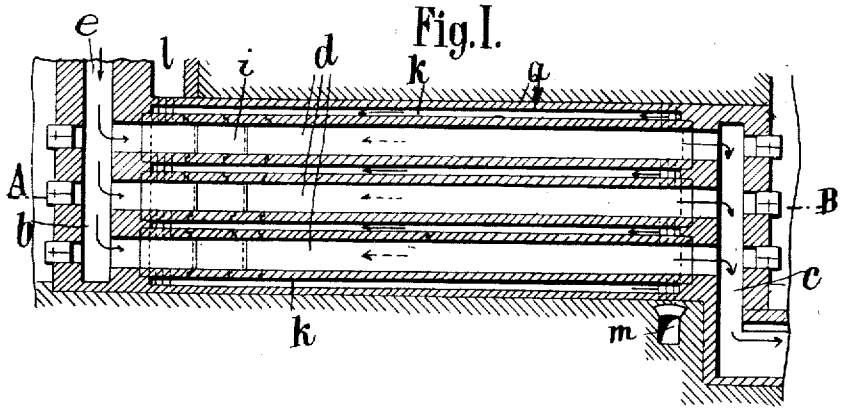


Fig. 2.

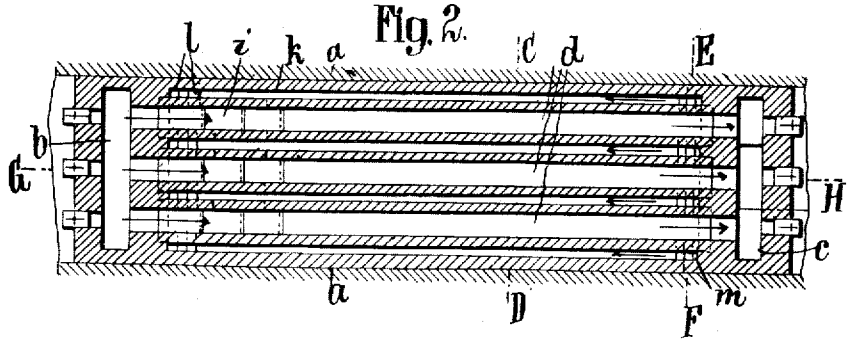


Fig. 3.

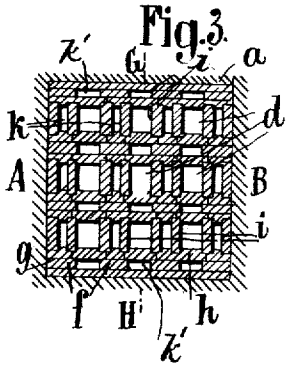


Fig. 4.

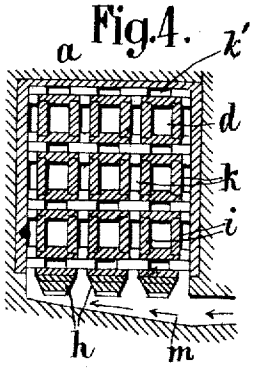
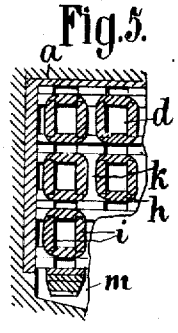


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

EDUARD BENDER, OF HAGEN, GERMANY.

REGENERATOR.

952,723. Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed August 13, 1909. Serial No. 512,714.

To all whom it may concern:

Be it known that I, EDUARD BENDER, a subject of the King of Prussia, residing at Moltkestrasse 2, Hagen, Germany, have invented certain new and useful Improvements in Regenerators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to air heaters or regenerators, by which furnace gases are caused to be continuously led through a series of passages formed of tile or brick, said tile or brick passages being simultaneously surrounded by air to be heated passing continuously through the regenerator either parallel with or in counter-current to the furnace heating gases, the specific construction of which will hereinafter be more fully explained with reference to the accompanying drawings in which like parts are similarly designated, and in which—

Figure 1 is a vertical longitudinal section on the line G—H of Fig. 3. Fig. 2 is a horizontal section on the line A—B of Fig. 1. Fig. 3 is a section taken on the line C—D of Fig. 2 and Fig. 4 is a section taken on the line E—F of Fig. 2, while Fig. 5 is a section similar to Fig. 4 showing a modification.

The casing for the regenerator comprises suitable brickwork or walling *a*, on the bottom of which are placed rows of tile or brick *f* spaced apart transversely so as to form longitudinal passages *k'* between them. On these rows of tiles *f* are supported tile having lateral rabbets, or in other words are T-shaped, the larger ones *h* of which cover the spaces between the tile *f* and the smaller ones or spacing tile *g* of which rest on the tile *f*, the tiles *g* and *h* alternating across the regenerator, thereby forming grooves between the abutting rabbeted sides of the tiles *h* and *g*. In these grooves are set other tile *i* substantially perpendicular to those *g* and *h*, which tile in turn are covered with inverted tile *g* and *h* thereby forming longitudinal passages *d* and smaller longitudinal parallel passages *k*, one on each side of the passages *d*. The structure thus described forms a unit, any number of which may be assembled with respect to one another to increase the number of passages *d* and *k* and as shown in Fig. 3, three such units have been assembled to form a rectangular regenerator.

The larger longitudinal passages *d* terminate at one end in an inlet chamber *b* and at the other end in an outlet chamber *c*, the gases from any suitable source being led to the chamber *b* through the passage *d* out through the chamber *c* to the stack or like. The smaller passages *k* are somewhat shorter than those *d* and terminate at a chamber *m* at one end and a chamber *l* at the other end, there being suitable openings left in one side of the rectangular regenerator casing to communicate with said chambers *m* and *l*. By omitting the tiles *f* and *g* at the chambers *m* and *l*, for example, as shown in Fig. 4, just above the chamber *m*, the air can pass around on all sides of the longitudinal flues *d* and enter the longitudinal air passages *k*. These longitudinal air passages *k* terminate at *l* in the same manner as shown with respect to the entrance chamber *m*. The air enters the chamber *m* and has its exit at *l*, *i. e.*, is a counter-current to the furnace gases. The opposite direction of the flow of the air may be attained by reversing the intake from *m* to *l*.

In Fig. 5, I have shown a modification in which the tile or brick *h* and *i* have rounded corners thereby offering less resistance to the air in its passage through the passages *k* of the regenerator that surround the passages *d*.

The tile or brick may be arched when constructing the passages *d* of large cross sectional area without departing from the nature of my invention.

The regenerator shown is of the horizontal type, where the gases and air are passed horizontally through the regenerator, it is of course obvious that the same construction may be made vertical.

I claim:—

1. A regenerator comprising one or more units, each composed of vertical tile spaced apart and horizontal tile forming longitudinal channels, spacing tile separating the horizontal tile from one another whereby said channels are surrounded by channels, an entrance chamber and an exit chamber for the longitudinal channels and an entrance chamber and an exit chamber for the spaces between said channels, communicating with the spaces between the channels, said communication being formed by omit-

ting the spacing tile between them at their entrance and exit ends.

2. A regenerator comprising one or more units, each composed of rows of flat tile spaced from one another, tile spanning the spaces between the aforementioned tile, having lateral rabbets and spacing tile alternating with said rabbeted tile also having lateral rabbets, flat tile mounted in the grooves formed by the adjacent rabbets and inverted rabbeted tile and spacing tile, an inlet and an exit chamber communicating with the channels formed by the larger tile and an inlet and an exit chamber communicating with the spaces formed on each side of the channels formed by the larger tile.

3. In a regenerator, a unit comprising flat tile spaced from one another, tile spanning the spaces between the aforementioned tile having lateral rabbets on one face, flat tile perpendicular to the rabbeted tile mounted in the rabbets thereof to form rectangular passages, the corners of said tile being rounded to form rounded outer corners on the passages so formed.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

EDUARD BENDER. [L. S.]

Witnesses:

OTTO KÖNIG,

WILLY KLEIN.