

E. P. STEVENS.
FIRE BRICK ARCH FOR LOCOMOTIVE FIRE BOXES.
APPLICATION FILED NOV. 7, 1910.

1,016,454.

Patented Feb. 6, 1912

FIG. 2.

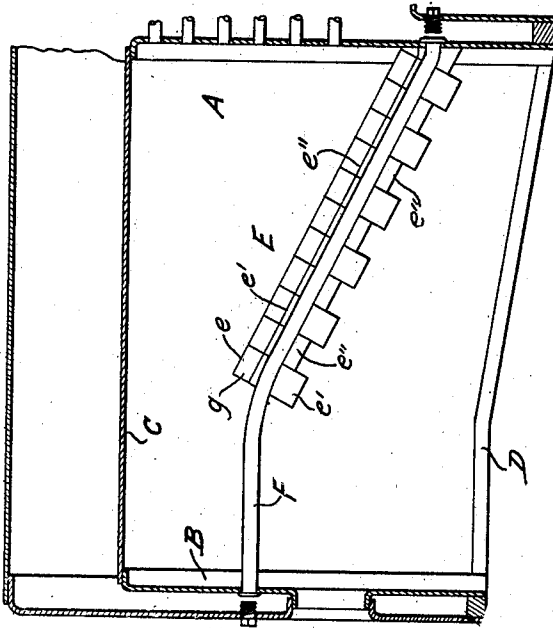


FIG. 1.

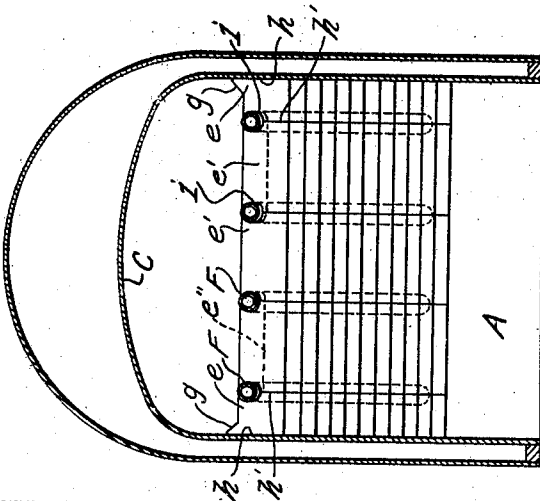


FIG. 3.

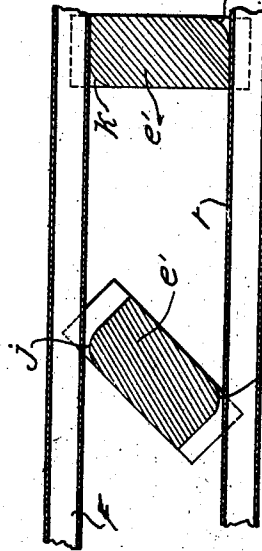
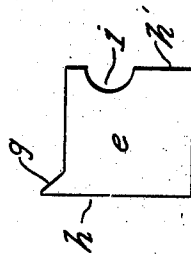


FIG. 4.



WITNESSES:

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FIRE-BRICK ARCH FOR LOCOMOTIVE FIRE-BOXES.

1,016,454.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ENOCH P. STEVENS, a citizen of the United States, residing at Morgan Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fire-Brick Arches for Locomotive Fire-Boxes, of which the following is a specification.

The invention relates to improvements in fire brick arches which extend from one side to the other of the fire box of a locomotive, and from the front wall of the fire box toward, but not to, the back wall thereof.

The object of this invention is to obtain a fire brick arch which will be easily built into place in the fire box and which will not only be durable, but which will, also, increase the durability of the water pipes supporting the arch; to obtain an arch which will aid combustion in the fire box and tend to prevent cinders leaving the fire box; and further, to obtain an arch which can be taken down without destroying the supporting water pipes thereof.

The manner in which I attain the above named, and other hereinafter recited results is fully set forth in the drawing and description about to be given, of the mechanism embodying said invention.

In said drawing Figure 1 is a vertical section of a locomotive fire box, having the structure referred to installed therein; Fig. 2 is a vertical section of the fire box and installed structure viewed at an angle of ninety degrees from the sectional view illustrated in Fig. 1; and Fig. 3 is a top plan view, on an enlarged scale, of a part of two of the pipes supporting the arch, and of two of the fire bricks which form said arch. Fig. 4 is a front view of a fire brick.

The same reference letter is applied to designate a given part throughout the several figures of the drawing.

A is the front of a locomotive fire box; F, F, are tubes; B the back, C the top and D the grate of said fire box.

E is a fire brick arch embodying this invention, and is built up with the fire bricks e , e' and e'' resting on and covering the water tubes F, F. The fire bricks e are provided with the projection g which is made for the purpose of increasing the length of the side h which comes in contact with the side of the fire box A. The side h' is provided with the recess i , which is substantially of the contour of one half of one of

the pipes or water tubes F, and the end of recess i is cut away to permit said bricks e to be turned into place with the water tube in the recess. This placing and turning of the fire bricks e is substantially the same as the turning and placing in position of the fire bricks e' and e'' , about to be described.

The fire bricks e' and e'' are similar, except that the bricks e' are deeper than the bricks e'' are. Both of these bricks are provided, at both ends thereof, with recesses i , which are similar to the recesses on one end of the bricks e , (also lettered i). The manner of placing the bricks e' and e'' in place on the water tubes F, F, is well illustrated in Fig. 3, as is also the position of these bricks on said tubes after they are properly placed.

After the several bricks e , e' and e'' are in place on the water tubes F, F, and while the arch is being built up, the cut away portion (j) is filled with a mixture of wetted fire clay, (unburned) of a thick pasty consistency, (k , Fig. 3), which mixture becomes baked when the fire box is put into use by the building of a fire therein.

By alternating the fire bricks e' and e'' in a row resting on the tubes F, F, recesses will be formed on the under side of the arch embodying this invention, while by using only fire bricks e' a very durable construction is obtained, which is well capable of resisting the flames of the fire in the fire box. I have found it desirable to build at least the middle row, in a fire box which is provided with four water tubes to support the arch, entirely of the bricks e' , and to build the remaining rows of bricks e' and e'' arranged to alternate in a given row, and also in the next adjacent row (which is made of bricks e). The depth of the bricks e may also be made to vary correspondingly with the variance of bricks e' , e'' , or they may all be made of the same depth, as preferred.

Those skilled in the art will readily understand that the row of bricks between the middle tubes F is subjected to greater heat than are the remaining rows. And also, that the portion of the water tubes on which the bricks of the arch rest, when said tubes are underneath the arch, that is, the arch resting thereon, are subject to greater fluctuations of temperature than is the portion between said arch and the back B of the fire

box, and that by protecting the said tubes in the manner herein described and illustrated, the liability of their giving way is lessened; but it has heretofore been found impossible to place the fire bricks forming the arch on the water tubes so as to embed said tubes in the arch as is done by me in this device. The rounding of the ends of the recesses which fit to the water tubes is termed by me "chamfering" and said ends are, therefore, said to be chamfered.

I claim:—

1. A locomotive fire box having water tubes extending from the front to the back walls thereof, in combination with an arch consisting of fire bricks respectively provided with recesses in the ends which come adjacent to said tubes, said recesses corresponding in shape with said tubes and chamfered at one end to permit the turning of the bricks into position on the tubes, and some of said bricks made of a given thickness and the remaining ones of a less thickness, to obtain recesses on the under side of the arch built up therefrom.

2. A locomotive fire box having water tubes extending from the front to the back walls thereof, in combination with an arch consisting of fire bricks respectively provided with recesses in the ends which come adjacent to said tubes, said recesses corresponding in shape with said tubes and

chamfered at one end to permit the turning of the bricks into position on the tubes, and some of said bricks made of a given thickness and the remaining ones of a less thickness, to obtain recesses on the under side of the arch built up therefrom, and non-combustible material in the spaces in said arch which are made by the chamfering of the ends of the recesses.

3. The combination of a locomotive fire box and water tubes extending from the front to the back walls thereof, with a fire brick arch consisting of a plurality of rows of bricks from the front wall of the fire box toward the back wall, and each of said rows consisting of a plurality of bricks, said fire bricks respectively provided with recesses in the ends thereof which come adjacent to said tubes, said recesses corresponding in shape with said tubes and chamfered at one end to permit the turning of the bricks into position on the tubes, and non-combustible material in the spaces in said arch which are made by the chamfering of the end of the recesses.

Signed at Chicago, this 3rd day of November, 1910.

ENOCH P. STEVENS.

In the presence of—

CHARLES TURNER BROWN,
CORA A. ADAMS.