



# UNITED STATES PATENT OFFICE.

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## BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 445,595, dated February 3, 1891.

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*To all whom it may concern:*

Be it known that I, THOMAS GAMON, a citizen of the United States, residing at 1629 Christian street, in the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Roofs of Brick-Kilns or other Similar Structures, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to an improvement in roofs of brick-kilns or other similar structures in which an arch of fire or other brick operates in connection with curved wrought-iron ribbed girders, called "continuous T-bars angle-irons," to prevent the sides of the roof from expanding.

The objects of my improvement are, first, to render the roof of the kiln or other similar structure capable of withstanding an unlimited amount of heat for a long period of time; second, to prevent the curved sides of the roof expanding in any appreciable degree and to allow the crown of the roof to expand within certain limits; third, to prevent the roof from collapsing when highly heated by allowing a limited expansion of the crown and preventing expansion of the sides. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a transverse vertical section of the kiln and roof. Fig. 2 is a side elevation of the same; and Fig. 3 is a detail view showing the girder, shoe, and knee in their proper relative positions.

The arch *a*, of fire or other brick, is built upon an ordinary brick-kiln or similar structure, the brick arch beginning at A and B. Outside of the brick arch, upon the top of the outside wall *b* of the kiln, at intervals are set the iron shoes *c* or other suitable irons, the upright part of the shoe or iron being nearest to and parallel with the outer face of the side of the kiln. Upon the cast-iron shoes or other irons are set the base ends of the continuous T-bars, angle-irons, or other ribbed irons *d*, the outside face of the web of such iron being brought in contact with and resting against the upright part of the shoe. The continuous T-bars, angle-irons, or other ribbed girders encircle the brick arch, the inside face of such iron fitting closely to the outside face of

the brick arch from the bases at A and B for a distance of about one-third of the arch on each side to C and D, the outside face of the brick arch between these points A and C, and B and D along the lines of the T-bars, angle-irons, or other ribbed girders being ridged sufficiently high and broad to fit closely to the under face of such T-bar, angle-iron, or other ribbed girder. Between these points C and D a space *e* is left between the outside face of the brick arch and the under face of the T-bar, angle-iron, or other ribbed iron to allow for the expansion of the crown of the brick arch when heated during the burning or other heating process, the sides of the brick arch between A and C, and B and D being prevented by the T-bars, angle-irons, or other ribbed girders from rising in any considerable degree. The T-bars, angle-irons, or other ribbed girders encircle the brick arch at intervals along the entire girth of the arch, the base ends resting upon independent shoes or other suitable irons. The web of the T-bars, angle-irons, or other ribbed irons at E and F is bolted to the bottom of the shoe or other suitable iron at G and H by means of the wrought-iron knee *f* at L and M. After the brick arch is built and the T-bars, angle-irons, or other ribbed irons are set and bolted, as above described, the sides of the kiln or similar structure are continued up and built around and upon the cast-iron shoes or other suitable appliance which may be used and knee and base ends of the T-bars, angle-irons, or other ribbed girders to prevent shifting or rising either vertically or laterally. During the burning or other heating process the roof tends to expand. The T-bars, angle-irons, or other ribbed irons lying close to the face of the brick arch for the distance of about one-third on each side has the effect of preventing but slight expansion there. Between these points, from C to D, the crown of the brick arch may expand until it reaches the under face of the girders, when further rising is prevented, and the whole roof, being curved, admits of this much play without collapsing or injury.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a roof for a brick-kiln or other similar structure, the combination of a curved arch of brick and curved metal girders clasp-

ing the brick arch at the sides and leaving a space between the crown of the said arch and the said metal girders, substantially as described, and for the purposes set forth.

5 2. The combination, in a brick-kiln or other similar structure, of a curved brick arch forming the roof, the metal girders surrounding said arch and leaving a space between said girders and the top of said brick arch, and a  
10 shoe secured to the girders for adjusting, setting, and keeping in position the girders, substantially as described.

3. The combination of the kiln having an arched roof, the shoe secured in the side walls of the kiln, the knees secured to the said shoes, and the arched girders extending over the roof of the kiln and having their ends secured to the knees, as set forth.

THOMAS GAMON.

Witnesses:

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