

O. WUNDRACK.
NON-COLLAPSIBLE FLAT ARCH FOR FURNACES.
APPLICATION FILED NOV. 28, 1917.

1,266,745.

Patented May 21, 1918.

Fig. 1

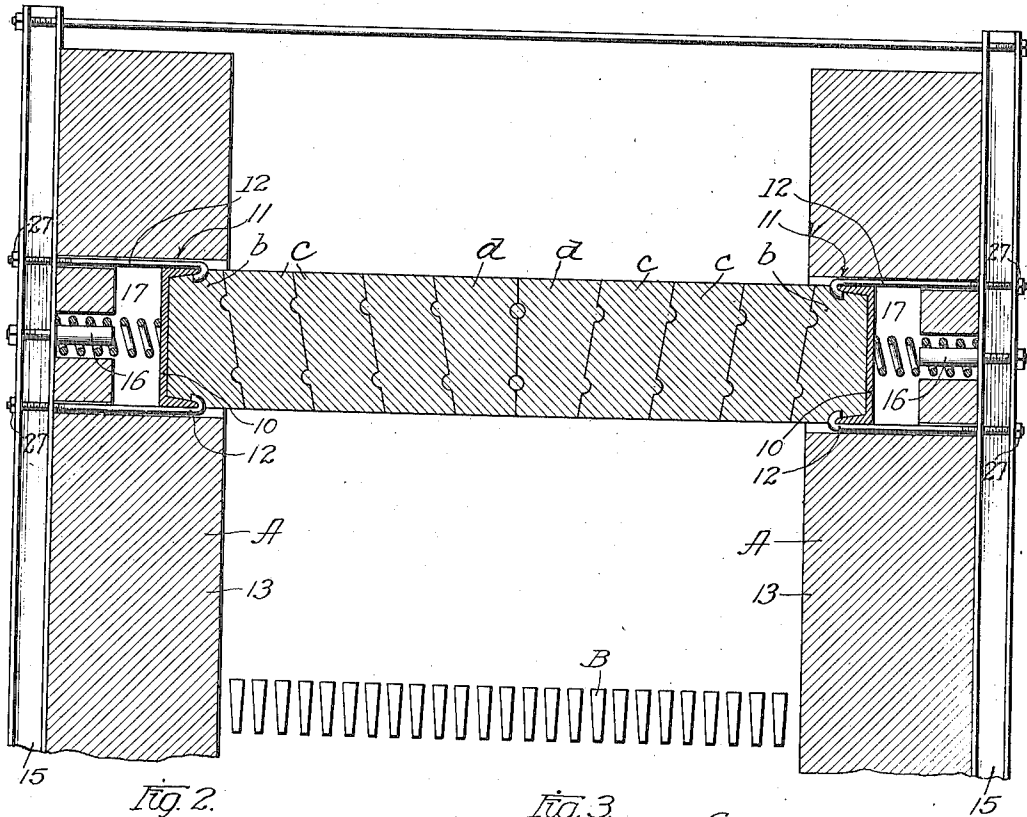


Fig. 2

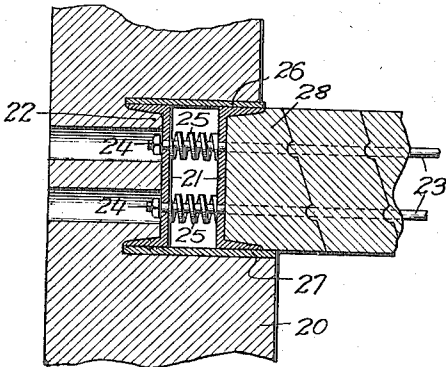
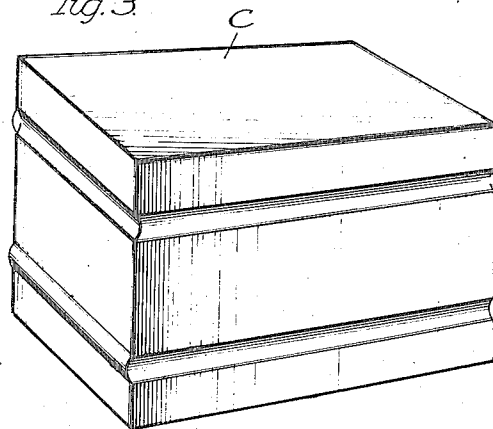


Fig. 3



Witnesses:
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UNITED STATES PATENT OFFICE.

OTTO WUNDRACK, OF MAYWOOD, ILLINOIS.

NON-COLLAPSIBLE FLAT ARCH FOR FURNACES.

1,266,745.

Specification of Letters Patent.

Patented May 21, 1918.

Application filed November 23, 1917. Serial No. 204,362.

To all whom it may concern:

Be it known that I, OTTO WUNDRACK, a citizen of the United States, residing at Maywood, in the county of Cook and State of Illinois, have invented new and useful Improvements in Non-Collapsible Flat Arches for Furnaces, of which the following is a full, clear, and exact description.

My invention relates to non-collapsible arches for furnaces, and particularly for the furnaces used in bakers' ovens.

The object is to provide a flat arch for furnaces the supporting abutments of which are yieldable and accommodate the lateral expansion and contraction of the same, according to the temperature thereof. This I accomplish by the simple means hereinafter fully described, and as particularly pointed out in the claims.

In the drawings:

Figure 1 is a transverse vertical section of my improved arch.

Fig. 2 is a corresponding view of a modification of the same.

Fig. 3 is a perspective view of one of the tiles of said arch.

Referring to the drawings, A represents the side-walls of a furnace, and B the grates thereof. The flat arch of this furnace is, preferably, constructed similar to that shown and described in a co-pending application for Letters Patent of the United States, filed by me December 14, 1916, Serial No. 136,910, and comprises end tiles or springers *b, b*, arch-tiles *c, c*, and center of key tile *d, d*. The upper and lower surfaces of the arch are horizontal and the contacting sides of springers *b* with arch-tile *c* and of the arch-tile with the key-tile are inclined from the top downward toward the center of the furnace, and the tile units of each arch are tongued and grooved together, and each arch is connected by tongues and grooves with the arch in front and in the rear thereof.

The outer side surfaces of springers *b* are vertical, and the upper and lower edges thereof are rabbeted to enable said sides to enter between the flanges and bear against the vertical web of a channel-iron abutment member 10. The inner surfaces of side-walls A are recessed to provide longitudinal shelves or seats 11 in which said abutment members are supported. Usually said members are set well within said seats 11 and

when the elements of the arch are properly assembled the principal portion of the springer-tiles are also located within the same.

The inward movement of the abutment members are limited by transverse bolts 12, 12, whose inner ends are hooked and grapple the inner edges of the flanges of said members, and the outer ends of said bolts extend through the side walls and through a vertically disposed metal beam 15 secured in any suitable manner against the outer sides of said walls and have nuts 27 on their outer screw-threaded ends in order to adjust them longitudinally.

At given points along the length of the side-walls 13 powerful coil expansion springs are interposed between the web of said channel-beam abutment members 10 and said vertically disposed metal beams 15, and these springs are centered by means of bolts 16, 16, the inner thicker ends of which enter the bore of said springs and terminate a suitable distance from said abutments so as to permit of the expansion or contraction of the arch and the resulting lateral movement of the abutments into the recess 17 in walls 13 immediately back of the same.

In Fig. 2 of the drawings, I show a modification of my invention in which the side-wall 20 is recessed on its inner side above the horizontal plane of the intrados of the arch, the inner surface of which is lined by a longitudinally disposed channel-iron beam 21, and the upper and lower surfaces of said recess are lined by flat steel plates 26 and 27, respectively. The inner edges of these steel plates 26 and 27 and the flanges of beam 21 are built into the wall and are immovable. Channel-beam abutments 22, which are, preferably, the same in cross-section as beams 21, are placed in and close the entrance of said recess and their upper and lower flanges engage plates 26 and 27 projecting toward the center of the furnace, and springers 28 of the arch engage and are seated in said channel-beam between its flanges, substantially as shown. Transverse tie-rods 23, 23, connect channel-beams 21, and the nuts 24, 24 on their screw-threaded ends are also seated in transverse openings through which said nuts can be reached. Between said channels 21 and the channel-beam abutments 22, said tie-rods are surrounded by strong coil-expansion springs 25, 25. These springs retain the abutment

channels in position and keep the tiles composing the arch in their relative coacting positions at all times and yet accommodate any expansion or contraction of the arch.

5 What I claim as new is:—

1. Arches for furnaces comprising springer-tiles, arch-tiles and key-tiles, and yieldable metal abutments engaged by said springer-tiles; said tiles being provided with
10 longitudinal grooves in one longitudinal side, and longitudinal tongues in the opposite longitudinal side which the tongue and groove of the contacting side of the next tile are adapted to engage.

15 2. An arch for furnaces comprising a transverse series of tile that includes springer-tiles, arch-tiles and key-tiles the contacting longitudinal sides of each of which is, except at the center of the span, inclined
20 downward toward the transverse center of the furnace and have longitudinal tongues projecting from one side that engage corresponding grooves in the engaging side of the next tile, and yieldable metallic abutments
25 by which said springer-tiles are supported.

3. Arches for furnaces comprising springer-tiles, arch-tiles and key-tiles, side-walls, abutment members in which said springer-tiles are seated consisting of rolled metal
30 beams supported by said walls, and resilient yielding devices that press said abutment members toward the center of the arch.

4. Arches for furnaces comprising springer-tiles, arch-tiles and key-tiles, side-walls,
35 abutment members in which said springer-tiles are seated consisting of rolled metal beams supported by said walls, resilient yielding devices that press said abutment members toward the center of the arch, and
40 means for limiting the movement of said members toward the arch center.

5. Arches for furnaces comprising side-walls, springer-tiles, arch tiles and key-tiles, abutment members consisting of rolled metal
45 beams in one side of which said springer-

tiles are seated, which members are supported in depressions in the inner sides of said walls, coil-springs bearing inward against the outer sides of said abutment members.

6. Arches for furnaces comprising side-walls having longitudinally elongated depressions on their inner surfaces, springer-tiles, arch-tiles, key-tiles, channel-iron abutment members supported in the said depressions, and transversely disposed coil-springs
55 bearing inward against said abutment members and located in said walls between the abutment members and the outside of said walls.

7. Arches for furnaces comprising side-walls having longitudinally elongated depressions on their inner surfaces, springer-tiles, arch-tiles, key-tiles and channel-iron abutment members supported in the said depressions, transversely disposed coil-springs
65 bearing inward against said abutment members and located in said walls between the abutment members and the outside of said walls, and means for limiting the movement of the abutment members in the direction of
70 the expansion of said springs.

8. Arches for furnaces comprising side-walls having longitudinally elongated depressions on their inner surfaces, springer-tiles, arch-tiles, key-tiles and channel-iron
75 abutment members supported in the said depressions, transversely disposed coil-springs bearing inward against said abutment members and located in said walls between the abutment members and the outside of said
80 walls, and transverse bolts the inner ends of which are hooked and grapple the edge of the flange of said abutment members, and means for adjusting the same longitudinally.
85

In witness whereof I have hereunto set my hand this 10th day of November, 1917.

OTTO WUNDRACK.

Witness:

FLORENCE MITCHELL.