Jan. 2, 1923.

A. L. KANAGY ET AL.
SECTIONAL FURNACE ROOF.
FILED JUNE 14, 1922.

1,440,468

2 SHEETS-SHEET 1

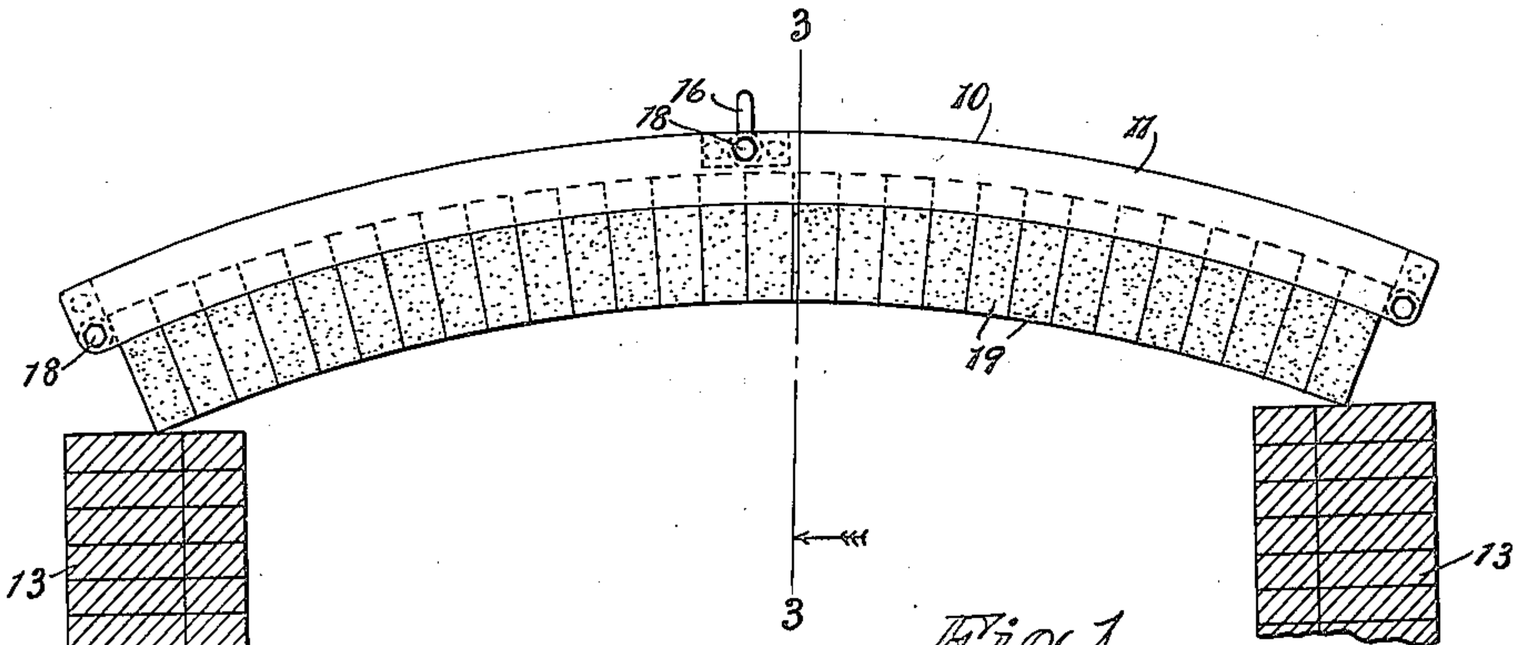

Fig. 1.

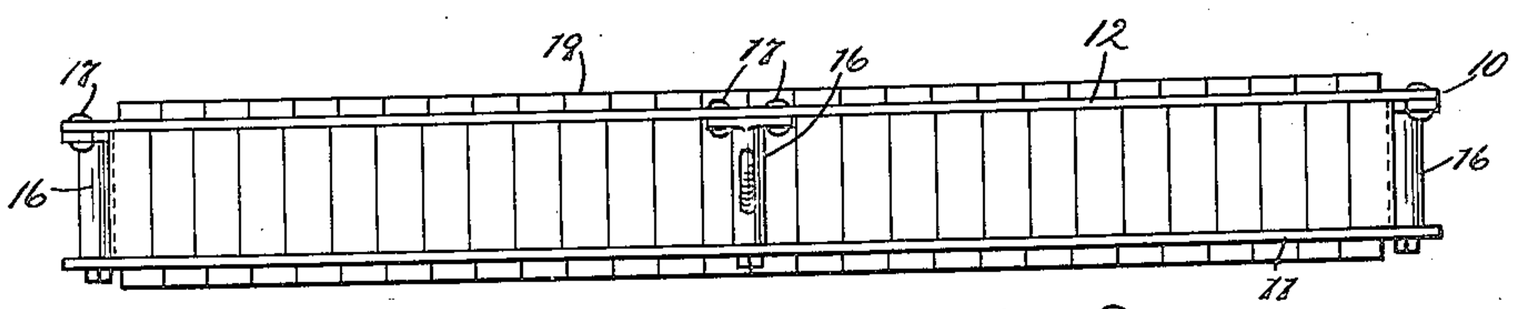

Fig. 2.

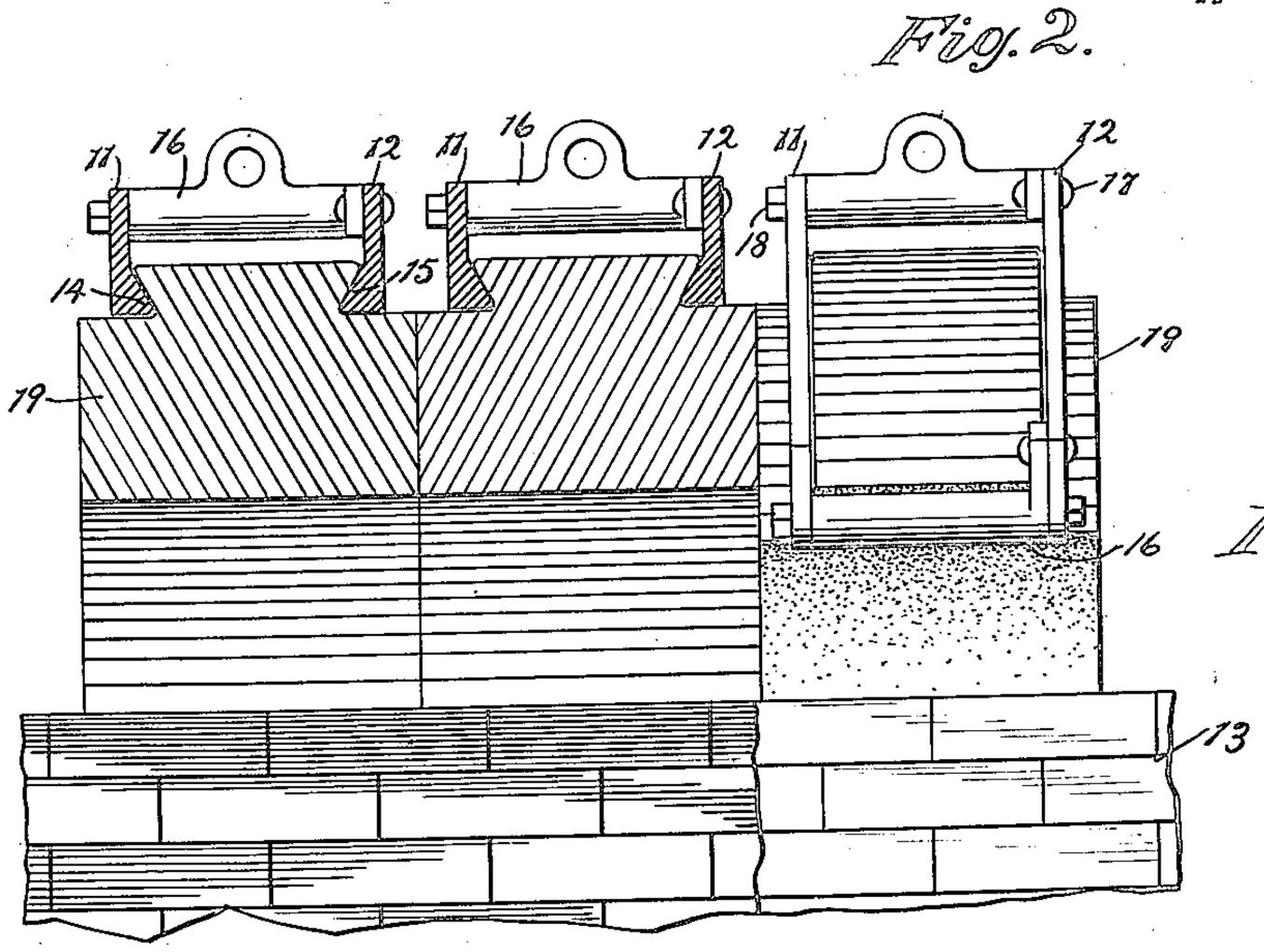

Fig. 3.

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2 SHEETS-SHEET 2

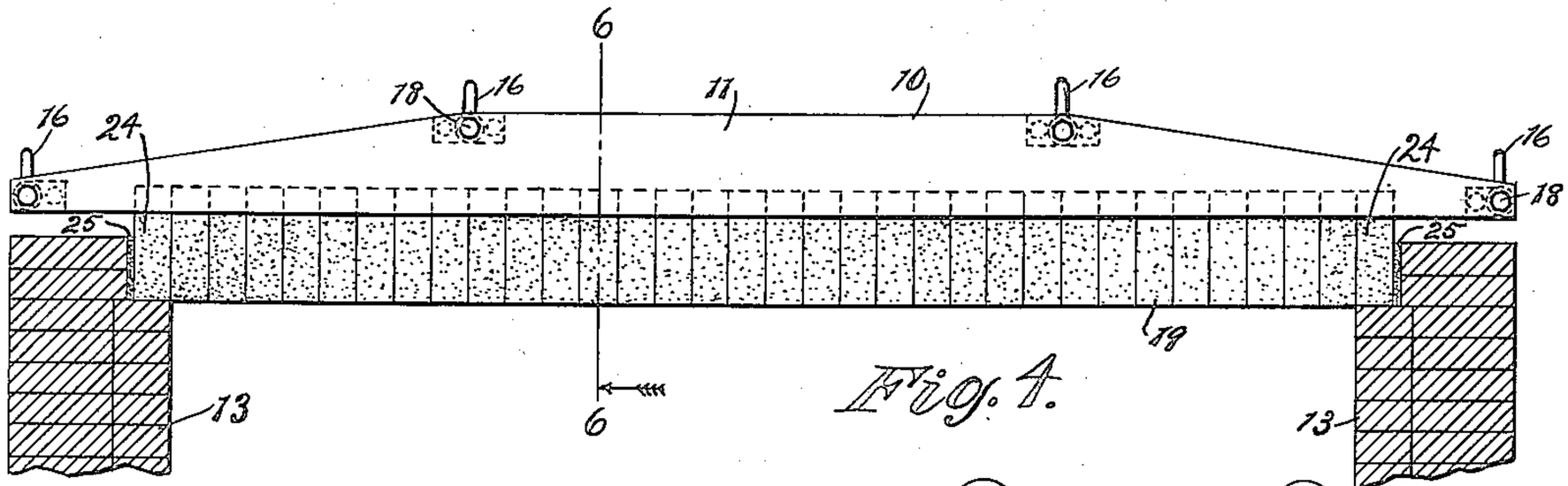

Fig. 4.

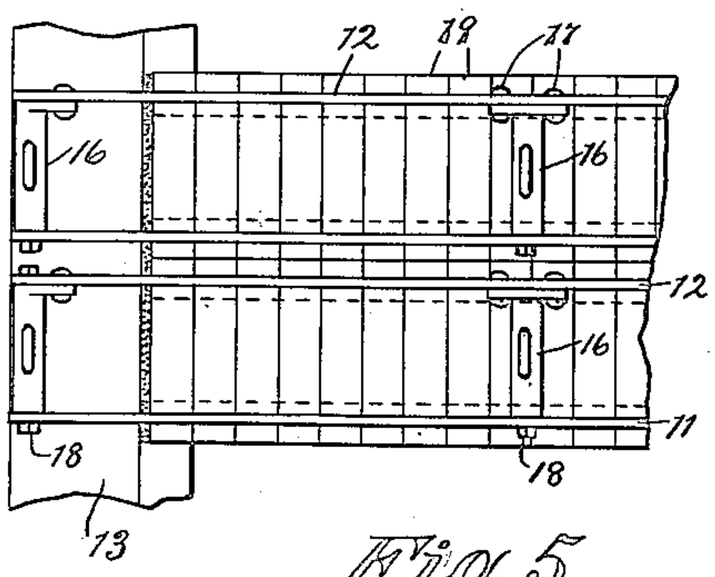

Fig. 5.

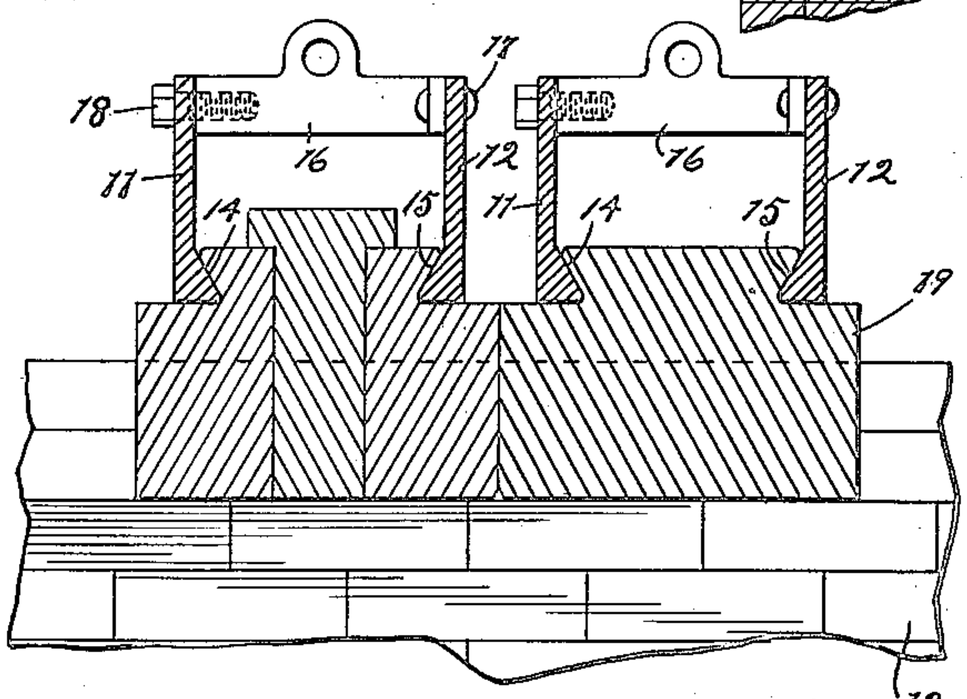

Fig. 6.

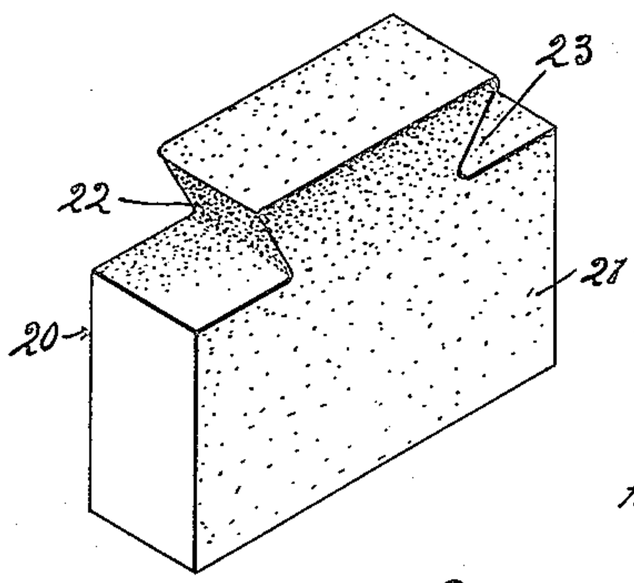

Fig. 8.

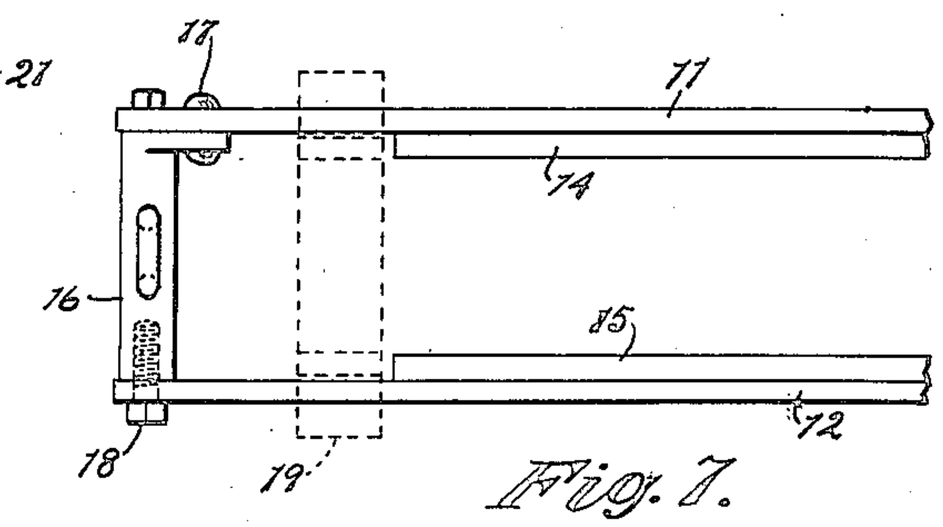

Fig. 7.

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Patented Jan. 2, 1923. 1,440,468

UNITED STATES PATENT OFFICE.

ABRAHAM L. KANAGY AND WALTER H. COTTON, OF CHICAGO, ILLINOIS.

SECTIONAL FURNACE ROOF.

REISSUED

Application filed June 14, 1922. Serial No. 568,243.

To all whom it may concern:

Be it known that we, ABRAHAM L. KANAGY and WALTER H. COTTON, citizens of the United States, and residents of Chicago, county of Cook, and State of Illinois, have jointly invented certain new and useful Improvements in Sectional Furnace Roofs, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to brick furnace roofs, and particularly to that class of furnace used for melting metals, such as the malleable iron and open hearth types.

The invention is also particularly adaptable to boiler arches where the trusses are not exposed to the fire, such as in the Dutch oven type.

The objects of the invention are to provide a roof of increased stability relative to collapse; to provide easy means for repairs while the furnace is in operation; to provide simple and inexpensive means for supporting the fire brick; and to provide easy means for reloading with brick.

The invention is illustrated in the accompanying drawings, in which

Fig. 1 is a side view of the roof section and setting as usually applied to malleable iron furnaces;

Fig. 2 is a plan;

Fig. 3 is an elevation of three sections showing one in end elevation and two in cross-section on line 3—3 of Fig. 1;

Fig. 4 is a side elevation of a modification of a roof section, showing the structure flat instead of bowed;

Fig. 5 is a plan view of a fragment of the structure shown in Fig. 4;

Fig. 6 is a sectional elevation of two sections on line 6—6 of Fig. 4, one of the sections being shown with a repair brick;

Fig. 7 is a plan view of a fragment of the truss showing brick supporting ledges and one method of inserting brick; and

Fig. 8 is a perspective view of the brick.

In the drawing numeral 10 generally designates a truss which consists of two beams 11 and 12, of sufficient length to span the side walls 13 of the furnace. Ledges 14 and 15, extending inwardly from the beams 11 and 12, and spacing members 16 are permanently secured to the beam 11, as by rivets 17, and are removably secured to beam 12, as by cap screws 18. These spacing members hold the truss beams in parallel relation and are each provided with an eye so as to facilitate the withdrawal from the roof of a section by means of a crane, as is the usual practice in charging metal treating furnaces.

The brick 19 (Fig. 8) in sections of the bowed or spring type of roof are made slightly tapered on the side, as 20, 21, to conform to the curvature of the roof, while in the flat roof the sides are parallel. The top of each brick is of dove-tail configuration, the sockets 22 and 23 being complementary in form to the ledges 14, 15, of the beams 11 and 12, which are so spaced that the dove-tailed ends of the brick may be slid into place, the ledges loosely fitting the sockets 22 and 23.

The brick may be placed in the truss by inserting the dove-tailed head through a passage on each end, as shown by dotted lines in Fig. 7, and sliding into the ledges to the desired position, or by the spreading of the beams by loosening the cap screws which hold the beams rigidly to the spacing members.

It is desirable that the brick at each end of each section rest upon the side walls of the furnace so there may be as little resistance to the expansion of the brick, due to the heat, as possible.

In Fig. 4 the end brick 24 set upon a recess at the top of the side walls 13. The pocket 25 between the extension of the side walls and brick may be filled with fire clay to insure a perfect seal.

Should any of the brick fall the cavity may be quickly closed by inserting the repair brick shown in one of the sections of Fig. 6, or by sliding the adjacent brick to close the cavity and inserting a new one at the end for the abutment.

We claim as our invention—

1. In a furnace roof, in combination, a plurality of sections each consisting of a pair of beams having projecting ledges, a plurality of brick having projections complementary to and resting on said ledges, and means for holding the beams in parallel relation.

2. In a sectional furnace roof, in combination, a truss consisting of a pair of beams each having an inwardly projecting ledge, spacing bars rigidly secured to the beams

and adapted to hold same in parallel relation, and a plurality of brick suspended from the ledges.

3. In a sectional furnace roof, a section consisting of a pair of beams rigidly secured in parallel relation, a ledge projecting inwardly from each of the beams, a plurality of brick suspended from the ledges, the end brick being adapted to set upon the side walls of the furnace and forming an abutment at each end for the entire section to rest upon.

4. The combination in a sectional furnace roof, of a pair of beams, a plurality of brick having dove-tailed engagement with the beams, a plurality of spacing bars for holding the beams in parallel relation, and means for spreading the beams for the purpose set forth.

5. In a sectional furnace roof, in combination, a truss consisting of a pair of beams spaced apart and held in parallel relation, brick holding ledges on the beams, a plurality of brick, and means for placing the brick in proper position on the ledges.

6. The combination in a sectional furnace roof, of a pair of parallel beams, and a plurality of brick having dove-tailed engagement with the beams.

7. The combination in a sectional furnace roof, of a pair of beams each having an inwardly projecting ledge terminating short of the ends of the beams, and a plurality of brick having projections complementary to and adapted to be slid into position upon said ledges.

8. In a sectional furnace roof, a section consisting of a pair of parallel beams each having an inwardly projecting ledge, the ledges terminating short of the ends of the beams, and a plurality of brick suspended from the ledges.

9. In a furnace roof, in combination, a pair of beams each having an inwardly projecting ledge, a repair brick comprising two vertical halves each half having a projection complementary to and adapted to rest upon one of said ledges, and a vertical key adapted to fit between said halves.

ABRAHAM L. KANAGY.
WALTER H. COTTON.