

F. GIRTANNER.
 ARCH FOR FURNACES.
 APPLICATION FILED JUNE 8, 1908.

910,809.

Patented Jan. 26, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

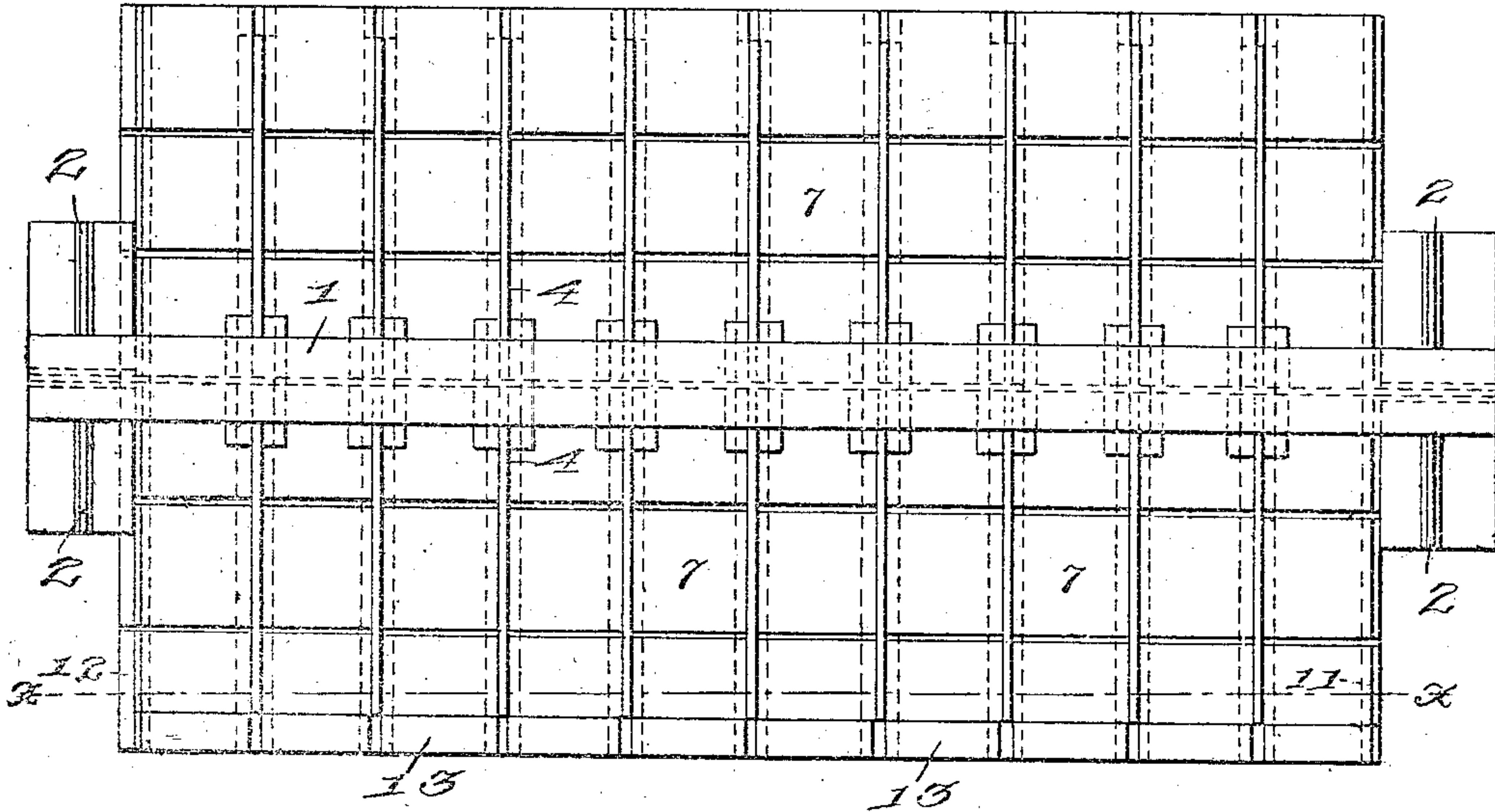


Fig. 5.

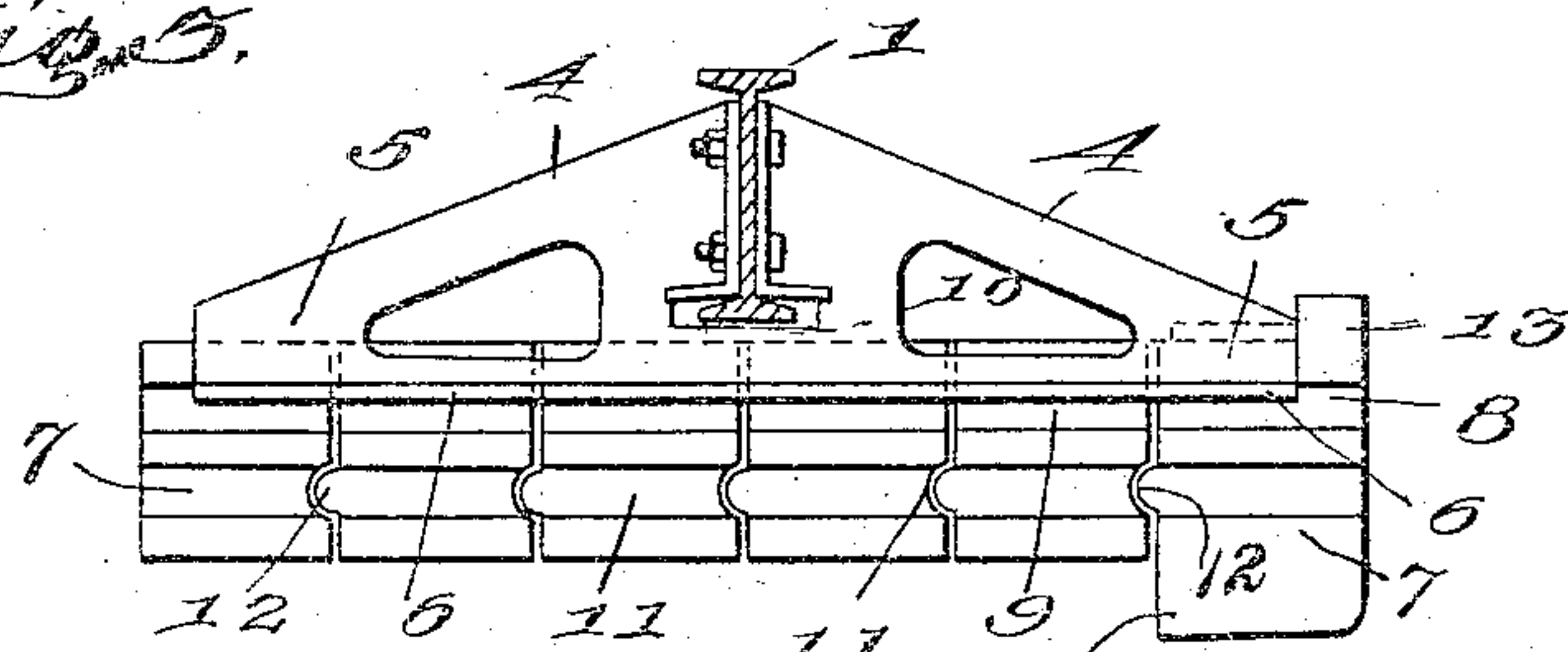


Fig. 4.

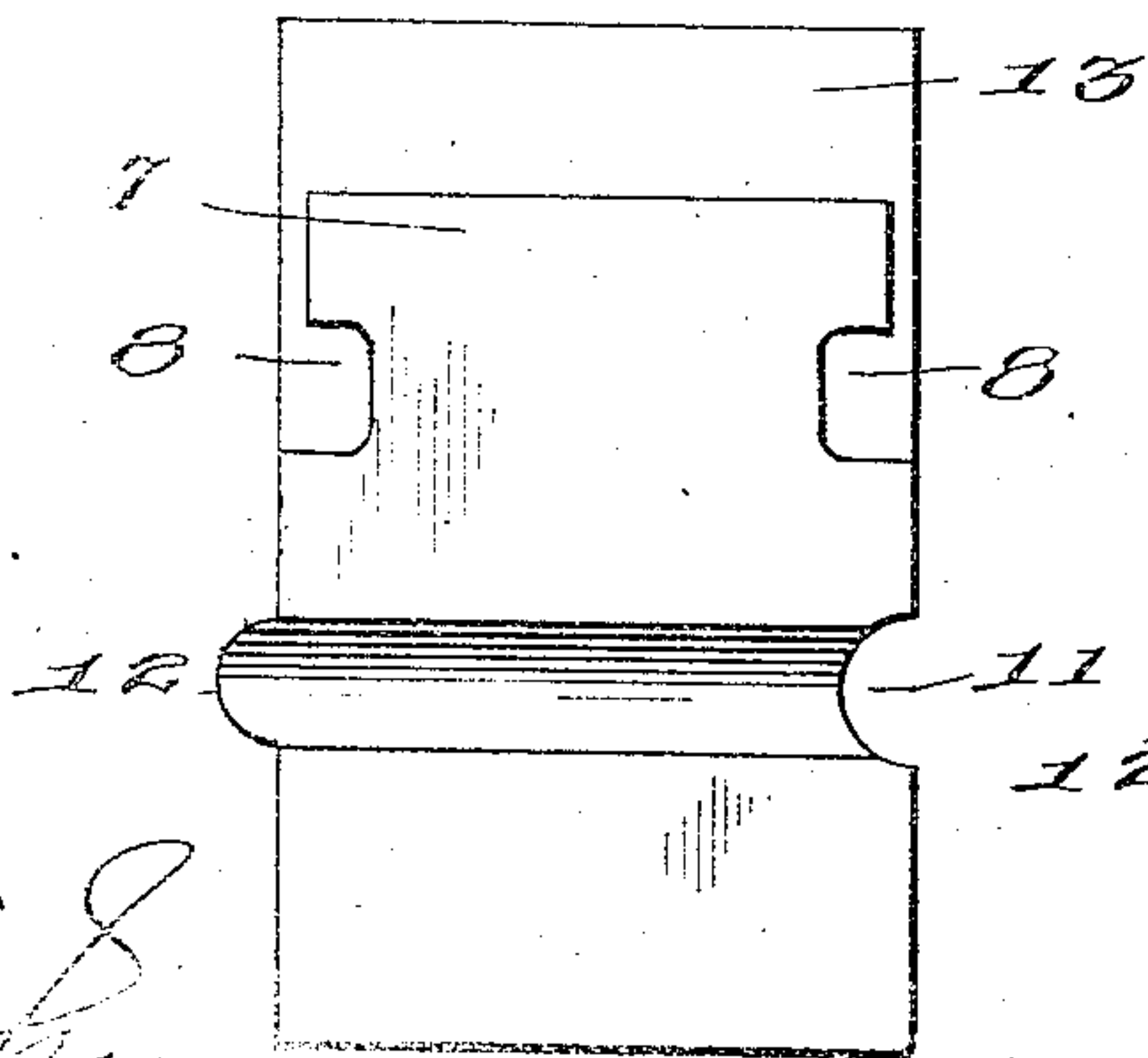
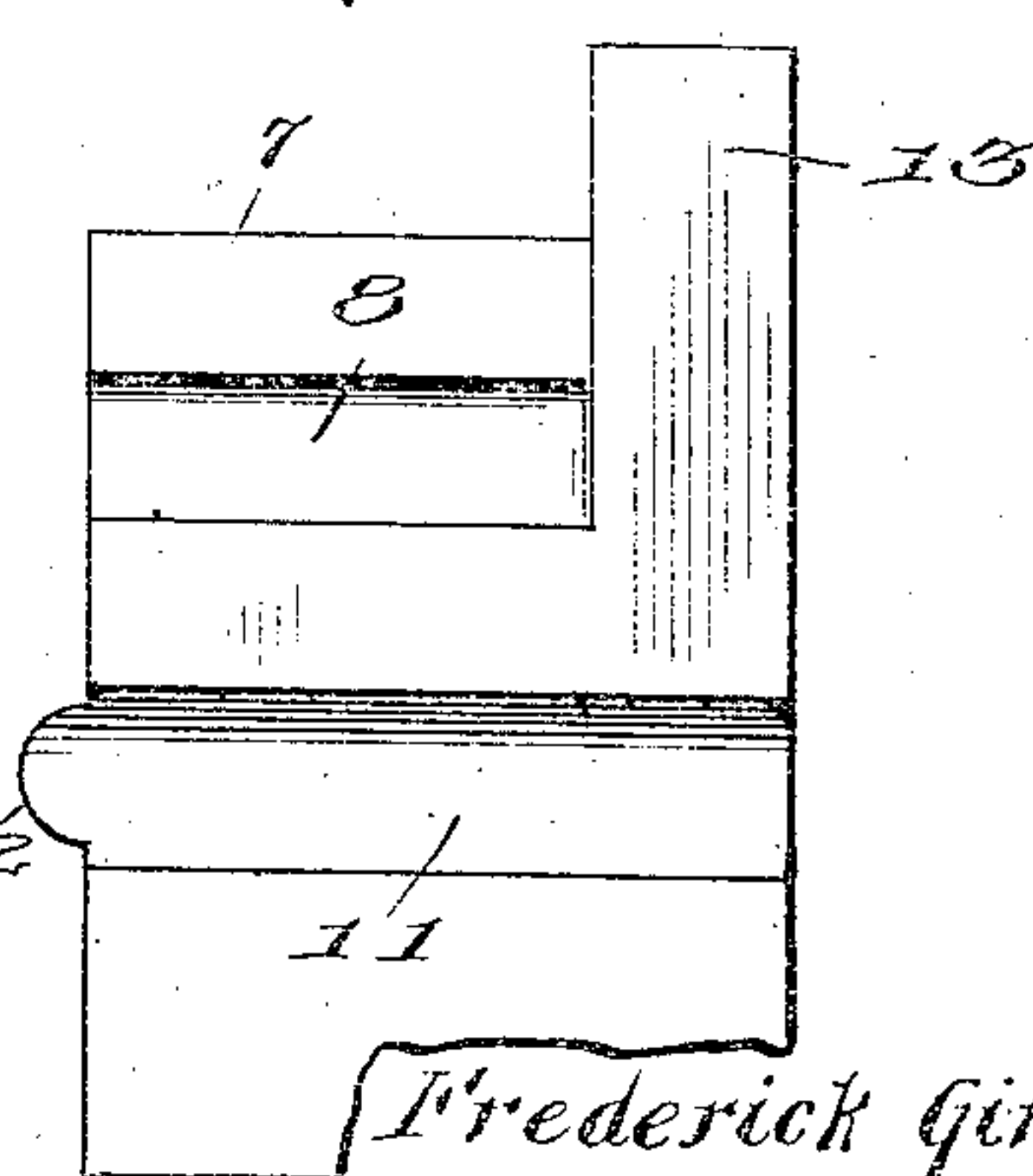


Fig. 5.



Inventor

Witnesses

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Frederick Girtanner,

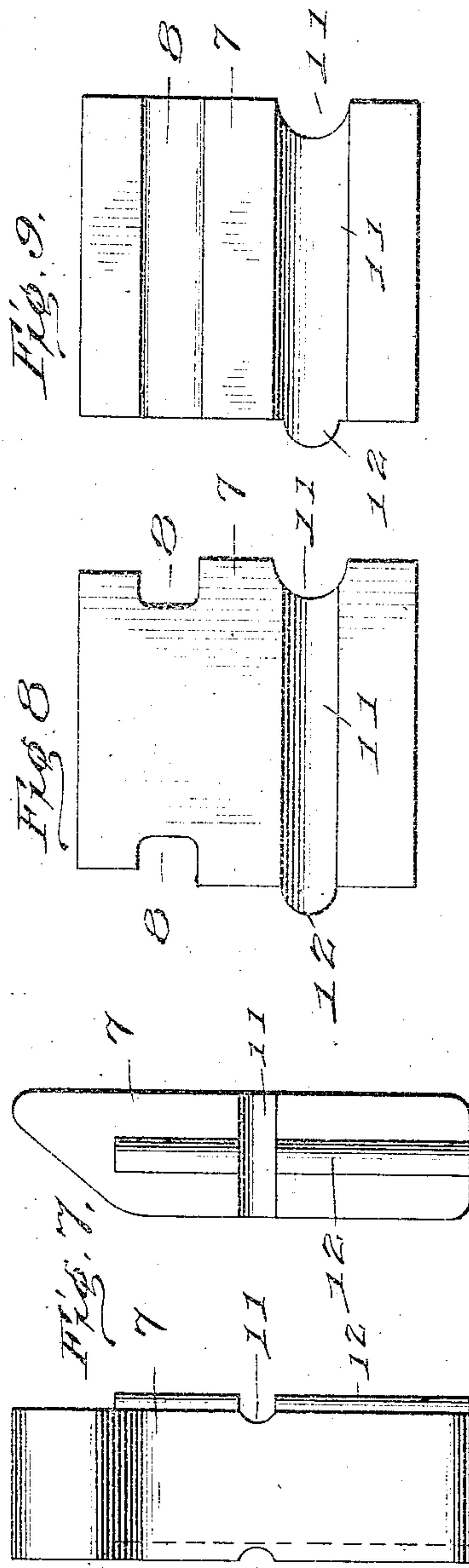
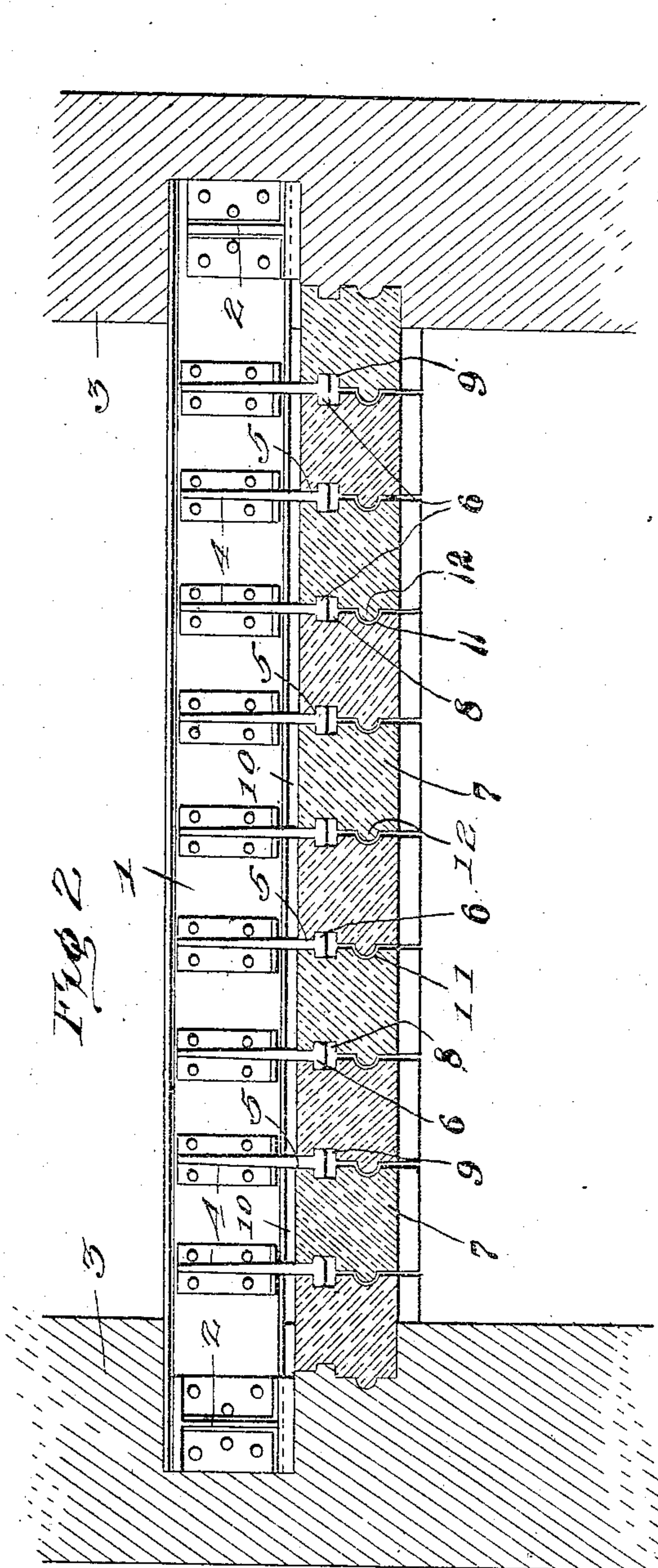
[Signature], Attorneys

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2 SHEETS—SHEET 2.



Witnesses

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Fig. 6.

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UNITED STATES PATENT OFFICE.

FREDERICK GIRTANNER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO LACLEDE CHRISTY CLAY PRODUCTS CO., OF ST. LOUIS, MISSOURI.

ARCH FOR FURNACES.

No. 910,809.

Specification of Letters Patent.

Patented Jan. 26, 1909.

Application filed June 8, 1908. Serial No. 437,381.

To all whom it may concern:

Be it known that I, FREDERICK GIRTANNER, a citizen of the United States, residing at St. Louis, in the county of St. Louis City and State of Missouri, have invented certain new and useful Improvements in Arches for Furnaces, of which the following is a specification.

This invention aims to provide a flat arch or crown for the combustion chambers of steam boiler and like furnaces, the construction being such as to admit of any element being readily replaced and of a flat arch being successfully employed, it having been found advantageous to embody a flat arch or crown in furnace construction over the ordinary curved arch, which latter, besides exerting an outward pressure upon the furnace walls, provides an unequal space between its lower side and the fire.

In accordance with this invention, a metal support or beam is employed and is supplied with brackets, the latter being of peculiar formation, and tiles are suspended from said brackets and are adapted to interlock at their opposing sides, the construction resulting in a flat arch and enabling anyone of the tiles to be removed or replaced.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment is shown in the accompanying drawings, in which:

Figure 1 is a top plan view of an arch embodying the invention. Fig. 2 is a sectional view of the arch on the line $x-x$ of Fig. 1, showing the furnace walls in connection therewith. Fig. 3 is an end view of the arch having the wall supporting brackets removed, and the supporting beam in section. Figs. 4 to 9, inclusive, are detail views of the several tiles used in the arch.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The main support of the arch consists of a

beam 1 which may be of any suitable construction and cross sectional outline, and, as shown, is of I form, the same being best adapted for the purpose. A pair of brackets 2 are provided at each end of the beam 1 and are bolted or otherwise secured to opposite sides thereof, said brackets serving to secure the beam in the walls 3 of the furnace. The wall brackets 2 are flanged so as to obtain a broad bearing against the sides of the beam 1 and upon the walls of the furnace, thereby securely holding the beam in the adjusted or desired position against possible misplacement. Other brackets 4 are attached to opposite sides of the beam 1 and have pendent portions 5 which project below the said beam and formed upon opposite sides with outer ribs or flanges 6, the latter serving to strengthen the brackets and to form supporting means for the tiles. The ends of the brackets 4 adjacent to the sides of the beam are flanged and are apertured to receive the fastenings by means of which said brackets are secured to the said beam.

The tiles 7 may be constructed of any fire resisting material and of any desired length and are provided at their meeting sides with interlocking tongues and grooves, whereby the tiles are mutually supporting and the hot air prevented from passing through the joints and burning the brackets and beam. Each tile is provided a short distance from its upper side with a groove 8 which is adapted to receive a supporting flange 6 at the lower edge of the pendent portion 5 of the brackets. The grooves 8 are deeper than the thickness of the flanges 6 so as to leave a space 9 below the lower edges of the brackets for the circulation of air and thereby prevent overheating or burning of said brackets. The tiles forming the arch are spaced a short distance from the lower edge of the beam 1, as indicated at 10, said space providing for a circulation of air to prevent burning of the beam. The grooves 11 match the tongues 12 so that when the several tiles are in position, interlocking joints are provided between the meeting sides thereof, as indicated most clearly in Figs. 2 and 3. The end tiles are formed with extensions 13 which project up along the outer ends of the brackets 4 and protect the same from the direct action of the fire.

The beam 1 having the several brackets attached is supported in the side walls 3 of a

furnace, the brackets 2 being built into said walls and forming a substantial support for the said beam. The tiles 7 are placed in position by slipping them into the space formed between the pendent portions of adjacent brackets 4, the tiles interlocking at their ends and sides as they are slipped into place. The end tiles, because of the extensions 13, must be slipped into place from opposite sides of the arch and the tiles are of such length that when in place the extensions 13 of the end tiles will practically touch the outer ends of the brackets and thereby protect the same.

15 The tiles range around the inner or rear edge of the arch and have pendent portions 14 which project below the lower surface of the arch and serve as retarders and deflectors to prevent the escape of smoke and insure a more thorough combustion thereof. By retarding the unconsumed smoke and gases they are subjected for a greater length of time to the action of the heat both from the bed of fuel and from the arch. When the smoke and gases reach the pendent portion 14 they are deflected downwardly and come in contact with the fire and are consumed. This construction enables soft coal to be burned in an ordinary furnace.

The portions of the several tiles bordering upon the joint are spaced apart below the interlocking parts, thereby allowing for expansion without producing injury which would result if the parts came close together.

Having thus described the invention, what is claimed as new is:

In combination, an I beam, wall brackets secured to opposite sides of the end portions of said beams, other brackets secured to opposite sides of the beam and having pendent portions provided along their lower edges with lateral extensions, and tiles having interlocking tongues and grooves in their meeting faces and provided with other grooves to receive the lateral extensions of the pendent portions of the aforesaid brackets for supporting said tiles, the latter being spaced from the lower portion of the beam and having spaces below the pendent portions of the brackets, said spaces providing for a circulation of air to prevent overheating or burning of the supporting parts.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK GIRTANNER. [L. s.]

Witnesses:

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