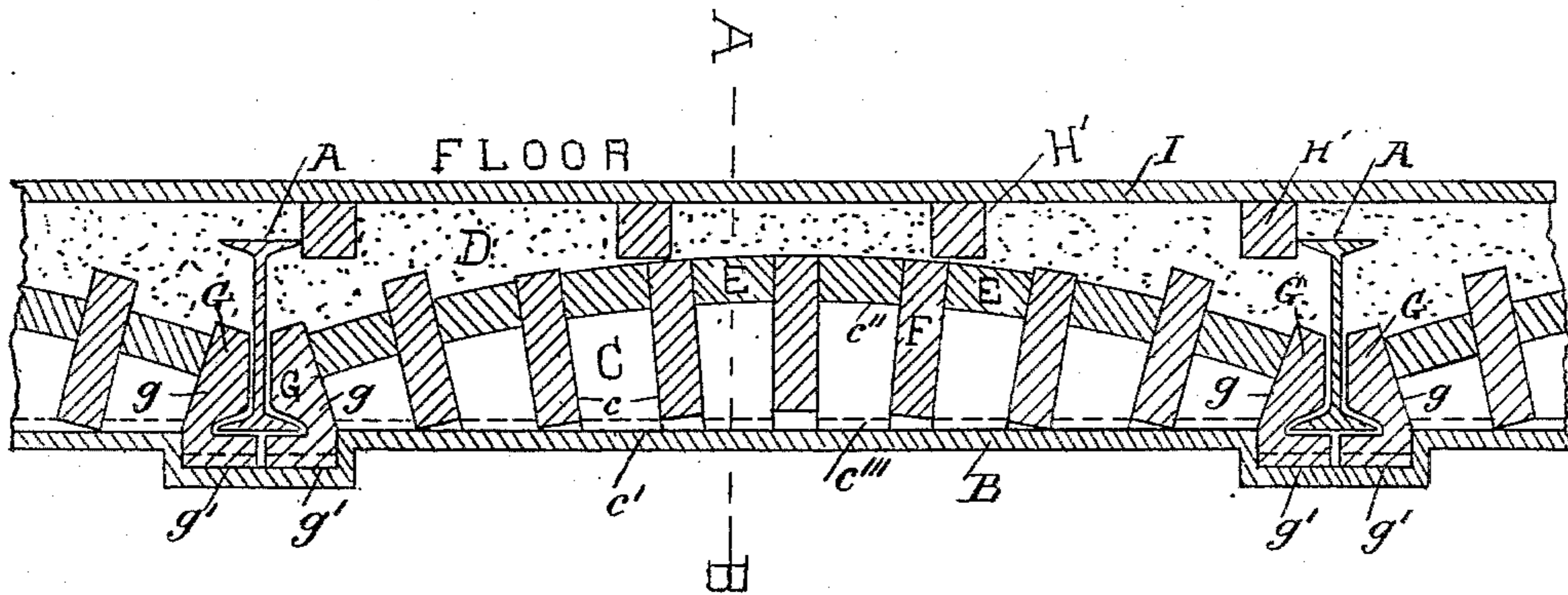


(No Model.)

H. G. ISAACS.  
COMBINATION FIRE PROOF ARCH.

No. 303,856.

Patented Aug. 19, 1884.



SECTION ON LINE H-I.

FIG. 1.

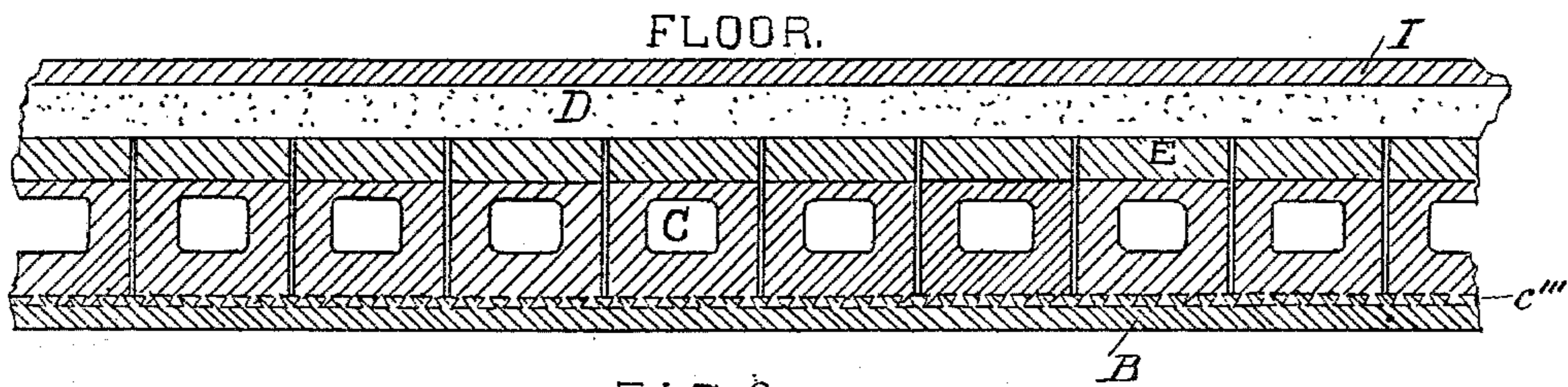
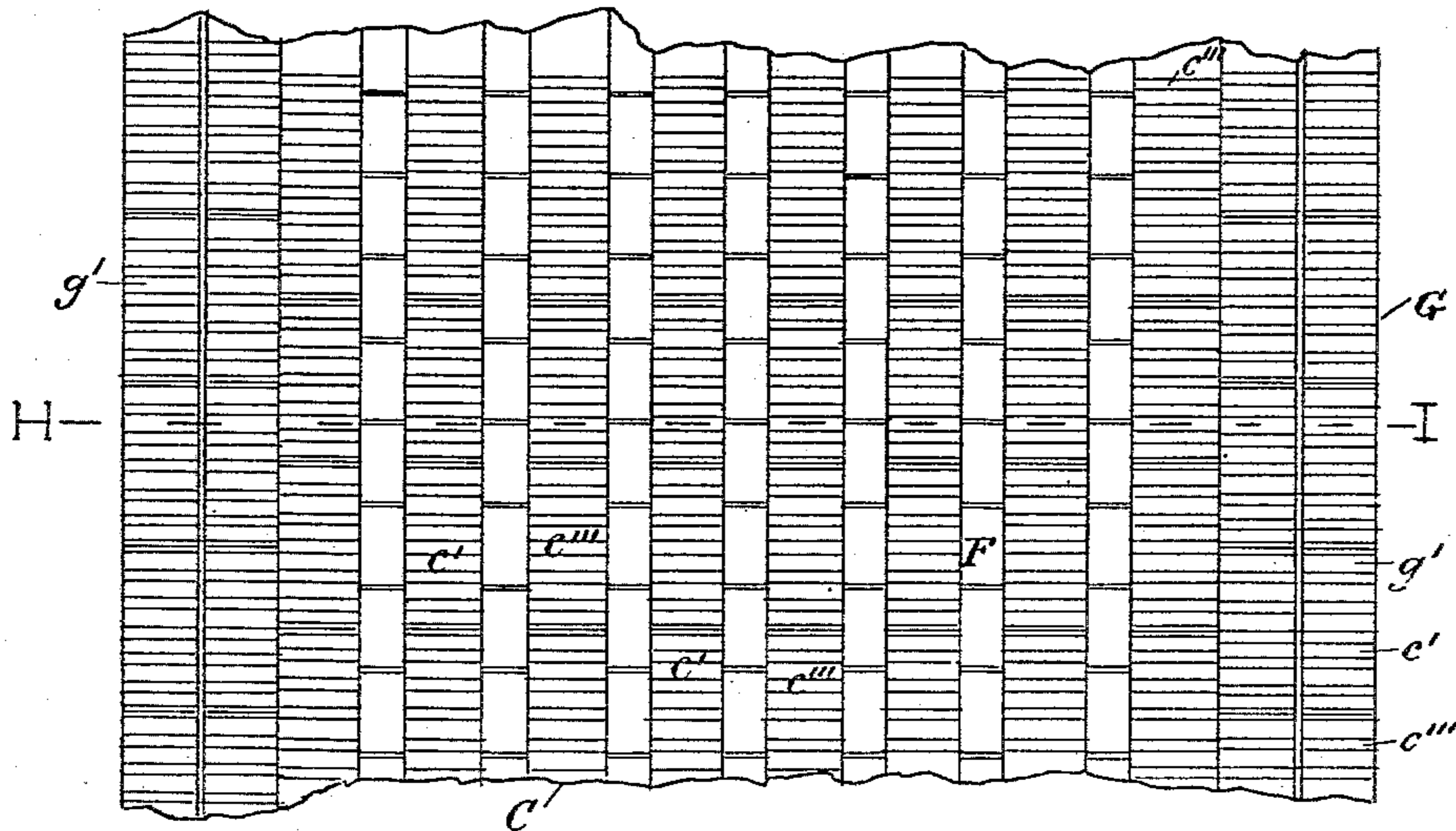


FIG. 2.

SECTION ON LINE A-B.



VIEW OF UNDERSIDE.

FIG. 3.

Witnesses  
A. P. Wyatt  
Thos. C. Reynolds

Henry G. Isaacs,  
Inventor.

# UNITED STATES PATENT OFFICE.

HENRY G. ISAACS, OF ST. LOUIS, MISSOURI.

## COMBINATION FIRE-PROOF ARCH.

SPECIFICATION forming part of Letters Patent No. 303,856, dated August 19, 1884.

Application filed March 17, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY G. ISAACS, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have invented an Improvement in Fire-Proof Arches, of which the following is a specification.

My invention relates to an arch, presenting a flat under side having voussoirs made either of terra-cotta, concrete, porous brick, or any other composite material, the voussoirs being formed with flat horizontal bottoms.

The object of my invention is to produce a strong and substantial arch of about the thickness of the length of a brick.

In order that my invention may be readily understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a vertical transverse section of my arch on the line H I, Fig. 3. Fig. 2 is a vertical longitudinal section on the line A B, Fig. 1, showing hollow voussoirs. Fig. 3 is an under view of the arch, the ceiling being omitted.

A may represent I-beams, to the base of which are secured abutments G, having slant sides *g* and dovetailed recesses *g'* on the under side.

The arch proper consists of voussoirs C, formed, preferably, hollow, as shown in Fig. 2, with slant sides *c*, flat horizontal under sides, *c'*, and flat tops *c''*. Dovetailed recesses *c'''* are formed in the flat under sides.

E are bricks or blocks placed on the voussoirs, and F the bonds or keys placed between the latter. Above this arch is placed the filling D, which receives the stringers H and floor I.

B is the ceiling, secured to the under side of the arch and abutments by occupying the dovetailed recesses. Thus it will be seen I obtain an arch level at bottom and a level ceiling. The shape of the voussoirs forms a curved line on the upper surface. By this construction I obtain the greatest necessary strength with the minimum amount of material, and of about one-half the thickness of the ordinary arches for supporting floors, and by the bonds or keys the voussoirs and brick-work are made independent and reciprocating as to strength and form.

I claim as my invention—

1. In an arch, the combination, with suitable beams, of abutments G, voussoirs C, having flat horizontal under sides, keys F, and blocks E on the voussoirs between the keys, as set forth.

2. In an arch, the combination of beams A, abutments G, voussoirs C, having flat bottoms, keys F between the voussoirs, blocks E above the voussoirs between the keys, filling D, stringers H', floor I, and the ceiling secured to the abutments and voussoirs.

HENRY G. ISAACS.

Witnesses:

A. P. HYATT,

THOS. C. REYNOLDS.