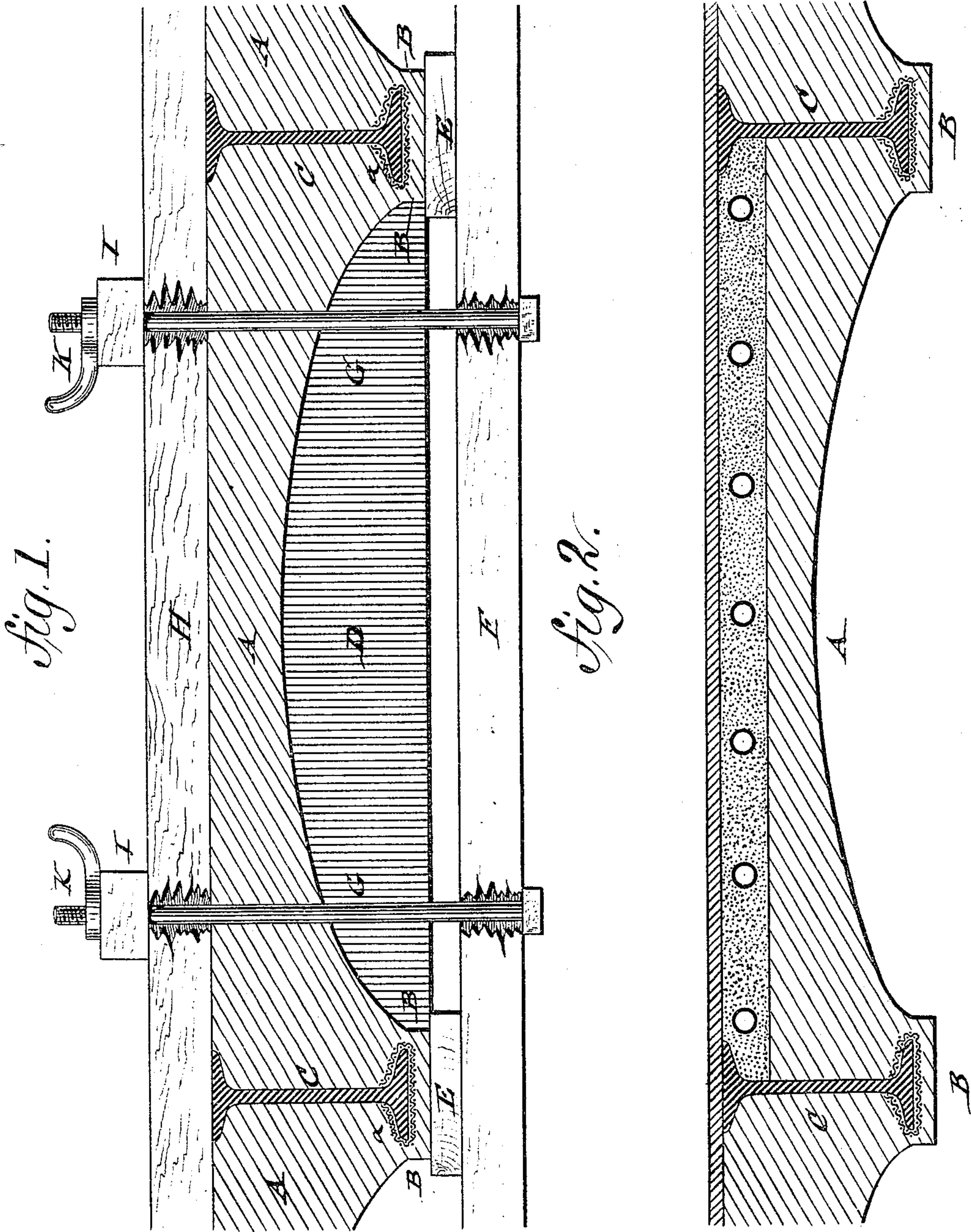


(No Model.)

C. J. BANDMAN.  
FIRE PROOF CEILING.

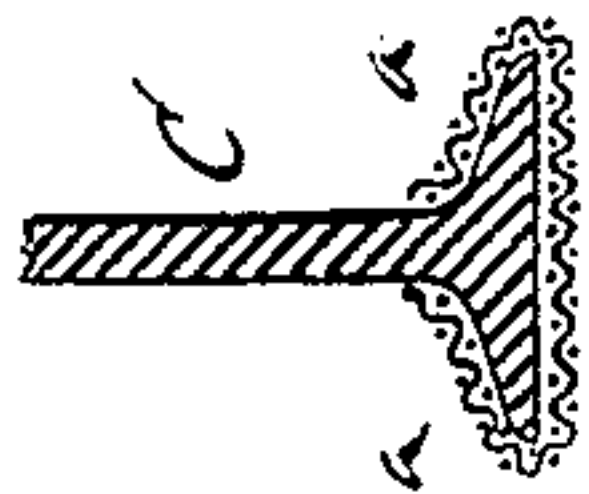
No. 270,623.

Patented Jan. 16, 1883.

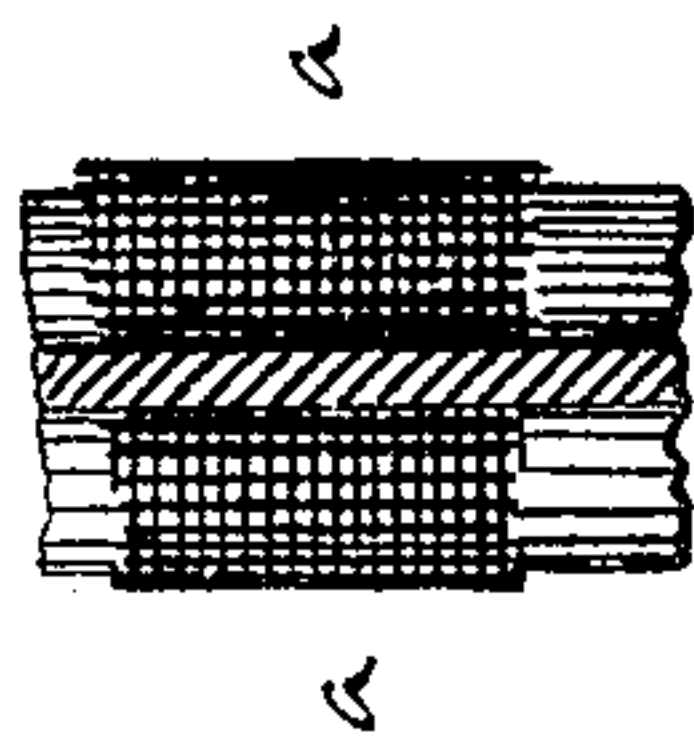


WITNESSES:  
*Ed. H. Rosenbaum*  
*Sidney Mann*

*fig. 3.*



*fig. 4.*



INVENTOR

*Charles J. Bandman*  
BY *Paul Goeppel*  
ATTORNEY



# UNITED STATES PATENT OFFICE.

CHARLES J. BANDMAN, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO  
RICHARD DEEVES, OF SAME PLACE.

## FIRE-PROOF CEILING.

SPECIFICATION forming part of Letters Patent No. 270,623, dated January 16, 1883.

Application filed November 10, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES J. BANDMAN, of the city, county, and State of New York, have invented certain new and useful Improvements in Fire-Proof Ceilings, of which the following is a specification.

This invention relates to the construction of fire-proof ceilings and floors; and it consists of a ceiling and floor that are made of arches of solid concrete, the skewbacks of which are extended around the bases of the I-beams, so as to incase them and protect them against fire. The concrete is made to adhere firmly to the beams by lapping around the base parts of the same wire-cloth or other equivalent material.

In the accompanying drawings, in which like letters refer to like parts, Figure 1 shows a cross-section of a fire-proof ceiling and floor in process of construction; Fig. 2, a cross-section of the ceiling, as completed, with a space between the arch and floor for the steam, gas, and water pipes. Fig. 3 is a cross-section of the lower portion or base of a beam, showing the means for holding the cement; and Fig. 4 is a sectional plan view of the same.

The arches and skewbacks are cast solid in concrete in the usual manner. The lower part of the beams is also incased in cement by forming a layer of sufficient thickness integral with the arches and skewbacks below the beams. In order that the protecting-layer below the beam shall securely adhere thereto, a piece of wire-cloth, perforated sheet metal, or other equivalent covering is lapped about the base of the beams, as shown in Figs. 1 and 3.

In constructing the ceiling, the concrete arch A and the portion B below the beams C are held in place, while setting, by means of the centers D, which rest on planks E, the latter forming, with the centers, the molds for the concrete arch and beam-covering portion B. The planks E are supported below the beams and supported on cross-beams F, which are suspended by hangers or bolts G from sup-

porting-timbers H and wooden blocks I above the beams C. The hangers G pass through holes of the beams F, timbers H, and blocks I, and are secured by handle-nuts K to the latter. When the cement has set the hangers G are released, and the timbers, planks, and centers are removed, leaving the cement arches, skewbacks, and beam-protecting portions in one solid and continuous piece of concrete. The centers may also be supported by scaffolding from below, as found most convenient. The floor-covering is laid in cement or otherwise after the centers, &c., have been removed.

By the wire-cloth around the bases of the beams the protecting portions B are reliably supported and prevented from dropping. The beams are consequently protected against fire and prevented from warping, rendering thereby buildings with such solid concrete ceilings and floors in a higher degree fire-proof than when the beams are left unprotected.

I am aware that fire-proof floors consisting of a cement arch supported by iron plates secured to the bottom of the wooden joists have been used heretofore, and I therefore do not claim the feature of a protecting cement arch, broadly.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination, in a fire-proof ceiling and floor, with the iron beams, of an arch, skewback, and beam-protecting portions made in a solid piece of concrete, and retained on the beams by means of wire-cloth or other equivalent material lapped around the base of the beams, substantially as and for the purpose shown and described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

CHARLES J. BANDMAN.

Witnesses:

PAUL GOEPEL,  
SIDNEY MANN.