J. J. SCHILLINGER.
Fire-Proof Building.

No. 221,107. Patented Oct. 28, 1879.

Fig. 1.

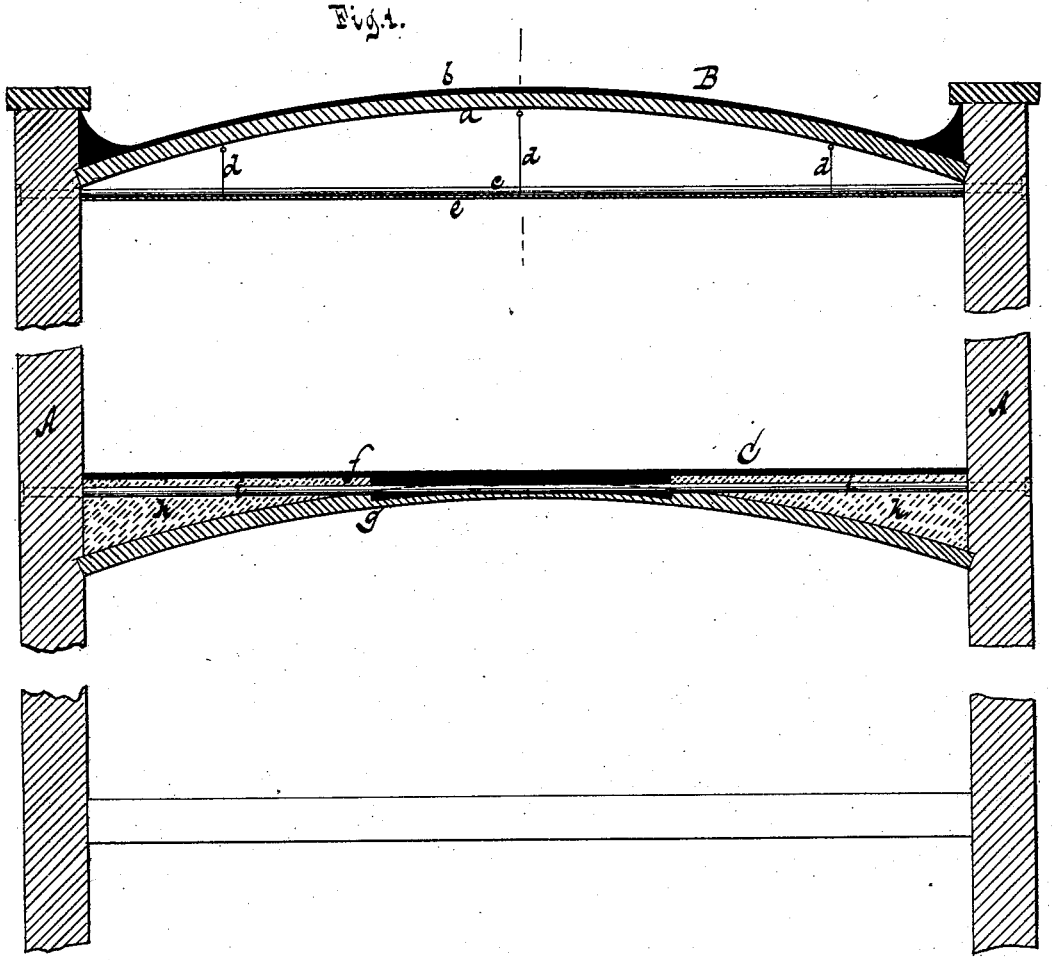
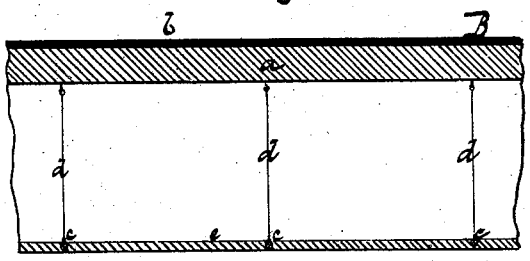


Fig. 2.



Witnesses
Otto Hufeland
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UNITED STATES PATENT OFFICE.

JOHN J. SCHILLINGER, OF NEW YORK, N. Y.

IMPROVEMENT IN FIRE-PROOF BUILDINGS.

Specification forming part of Letters Patent No. **221,107**, dated October 28, 1879; application filed June 5, 1879.

To all whom it may concern:

Be it known that I, JOHN J. SCHILLINGER, of the city, county, and State of New York, have invented a new and useful Improvement in Fire-Proof Buildings, which invention is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical section in a plane at right angles to the side walls of the building. Fig. 2 is a similar section of the roof in a plane parallel to the side walls, and on a larger scale than the previous figure.

Similar letters indicate corresponding parts.

The invention consists, first, in the combination, in a building, of a roof composed of a continuous arch formed of a composition of coal-ashes, plaster-of-paris, and lime, or similar composition, and a top layer of hydraulic cement, with tie-rods connecting the walls of the building, rods connecting the arch, and tie-rods for giving additional supports to said tie-rods, and a ceiling supported by the latter; second, in a novel construction of ceiling and floor, in which the ceiling is composed of an arch formed of a composition, as above described, and having a leveled covering or filling, upon which is laid a layer of tar-paper or bitumen surmounted by a floor of hydraulic concrete.

In the drawings, the letters A A designate the side walls of a building, which may be twenty feet (more or less) apart. These side walls support the roof B, which consists of a continuous arch, *a*, extending from one side wall to the other, and from the front to the rear of the building. This arch is made of a composition of coal-ashes, cinders, coke, plaster-paris, and lime, or of any other material of a similar nature; and it is made by first securing between the side walls, A A, a suitable shell of wood, then casting the composition on this shell, and, finally, removing the shell when the composition has set. For a building twenty feet wide the arch *a* ought to have a rise of about eighteen inches, and its thickness at the skew-backs ought to be about five inches, and in the center about four inches. After the arch *a* has set it is covered by a layer, *b*, of hydraulic cement, and the upper surface thereof is painted over with bitumen, so as to exclude moisture. Said layer *b* is about one inch in thickness throughout, except at its junctions with the side walls, where its thickness is considerably increased, as shown in Fig. 1, and it is formed so as to form gutters to carry off the water. Directly beneath the arch *a* are tie-rods *c*, which extend through the side walls, A A, and are connected to the arch at suitable intervals by wires *d*. These tie-rods are about half an inch thick, and placed about two feet apart. They serve to support the ceiling *e*, which is formed of cement and plaster-paris, or any other suitable composition. Between the ceiling and the arch *a* is an air-space, so as to prevent heat or cold from penetrating too freely from the roof down into the room beneath the ceiling *e*.

The floor C is composed of a layer, *f*, of hydraulic cement, which extends from side wall to side wall, and is about one inch in thickness at its sides, and about two and a half inches thick in the middle. This thick middle section of the cement layer *f* rests directly upon a continuous arch, *g*, which is made in the same manner as the arch *a*, and the side parts of which are covered by fillings *h*, of coke and cement or other suitable material, which fillings form the supports for the thin side sections of the cement layer *f*. With this floor are combined tie-rods *i*, which extend through the side walls, A A, the fillings *h*, and the thick central section of the cement layer *f*, so that they are entirely concealed. The arch *g* may form the ceiling of the room below. Between the layer *f*, the fillings *h*, and the arch *g* may be placed a layer of tar-paper or bitumen, or both, to prevent water from passing through.

By these means strong, light, and durable fire-proof roofs, ceilings, and floors can be constructed with great economy.

I am aware of the patents of Thaddeus Hyatt, granted July 16, 1878, and numbered 206,112, and July 23, 1878, numbered 206,332 and 206,333, and am also aware of the book entitled "An Account of some Experiments with Portland Cement and Concrete Combined

with Iron as a Building Material," published in 1877 in London, and do not claim anything described in said patents or book.

What I claim as new, and desire to secure by Letters Patent, is—

The combination, in a roof for buildings, of a continuous composition arch extending from one side wall to another, a layer of hydraulic cement, covering said arch, and tie-rods connecting the walls, and supports connecting the arch and tie-rods, and the ceiling supported by the latter, all substantially as described.

In testimony whereof I have hereunto set my hand and seal this 31st day of May, 1879.

JOHN J. SCHILLINGER. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.