

(No Model.)

J. SMITH.  
FIRE AND WATER PROOF CEILING.

No. 407,376.

Patented July 23, 1889.

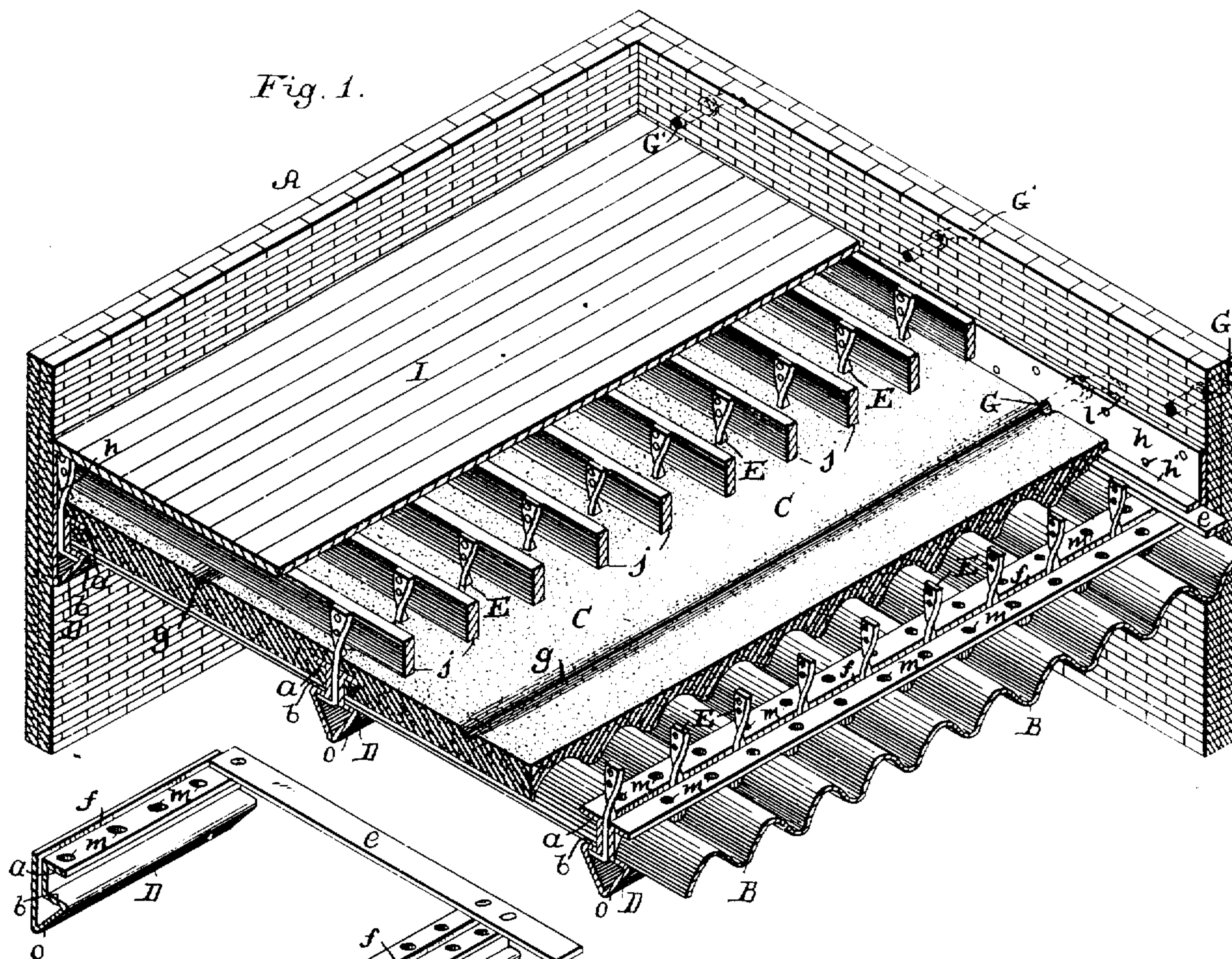


Fig. 2.

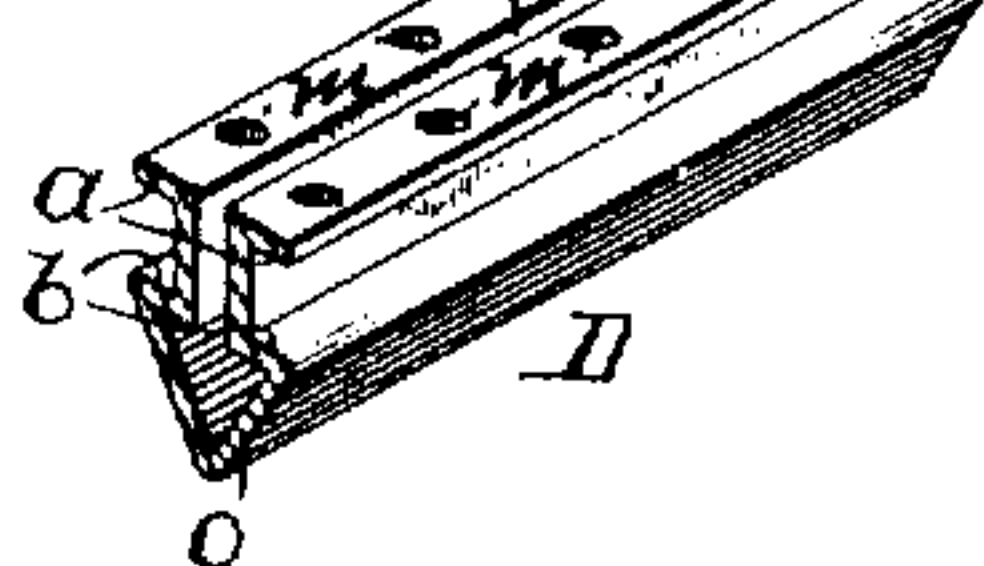


Fig. 4.

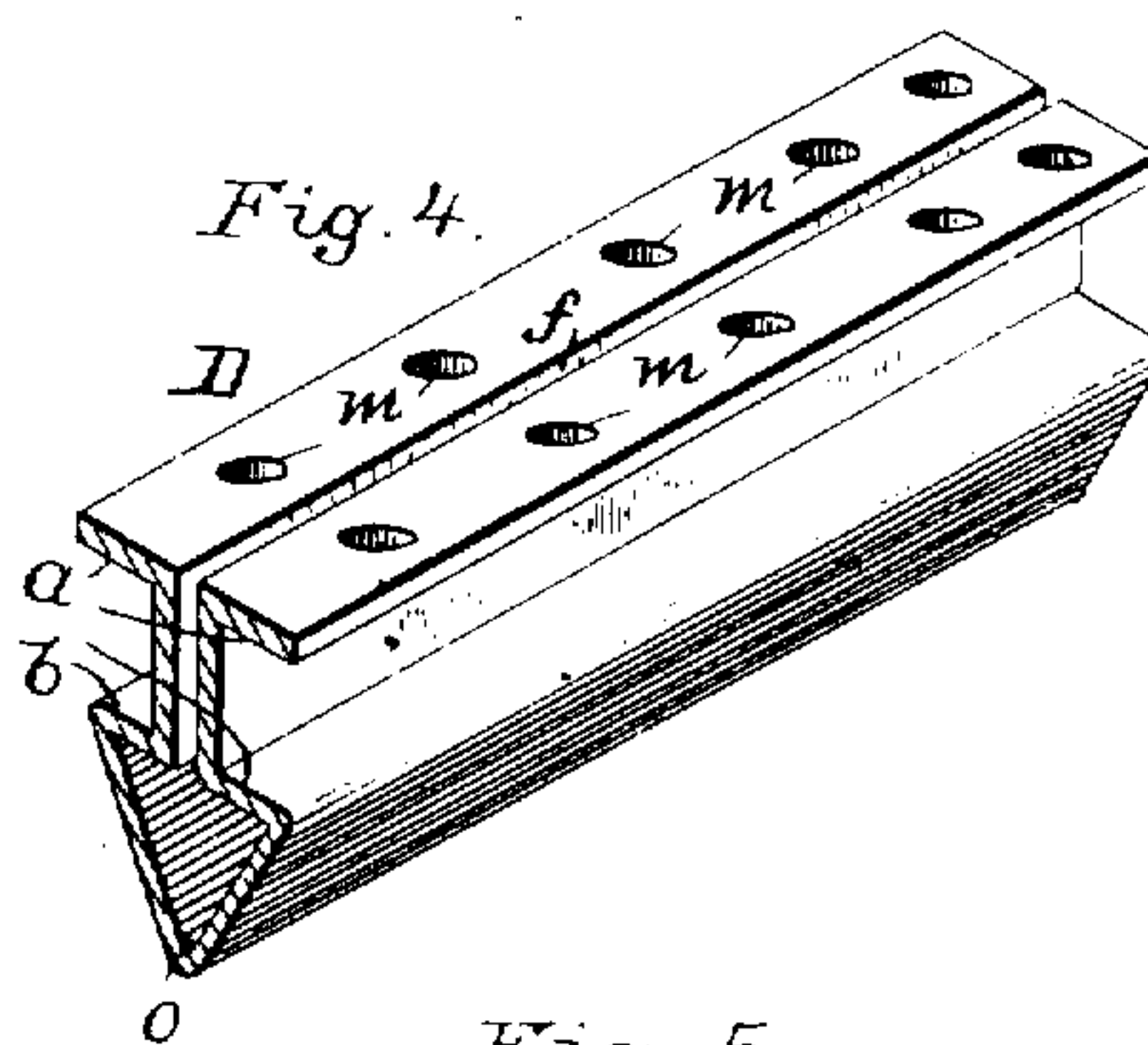


Fig. 3.

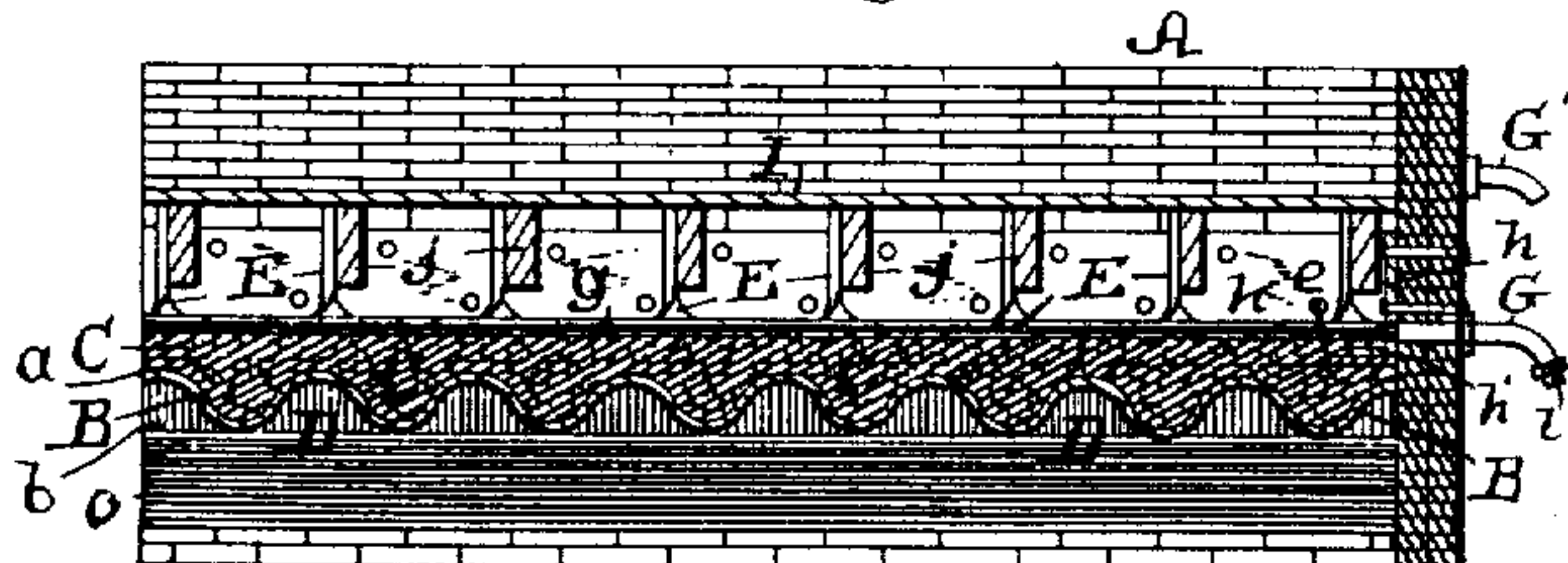
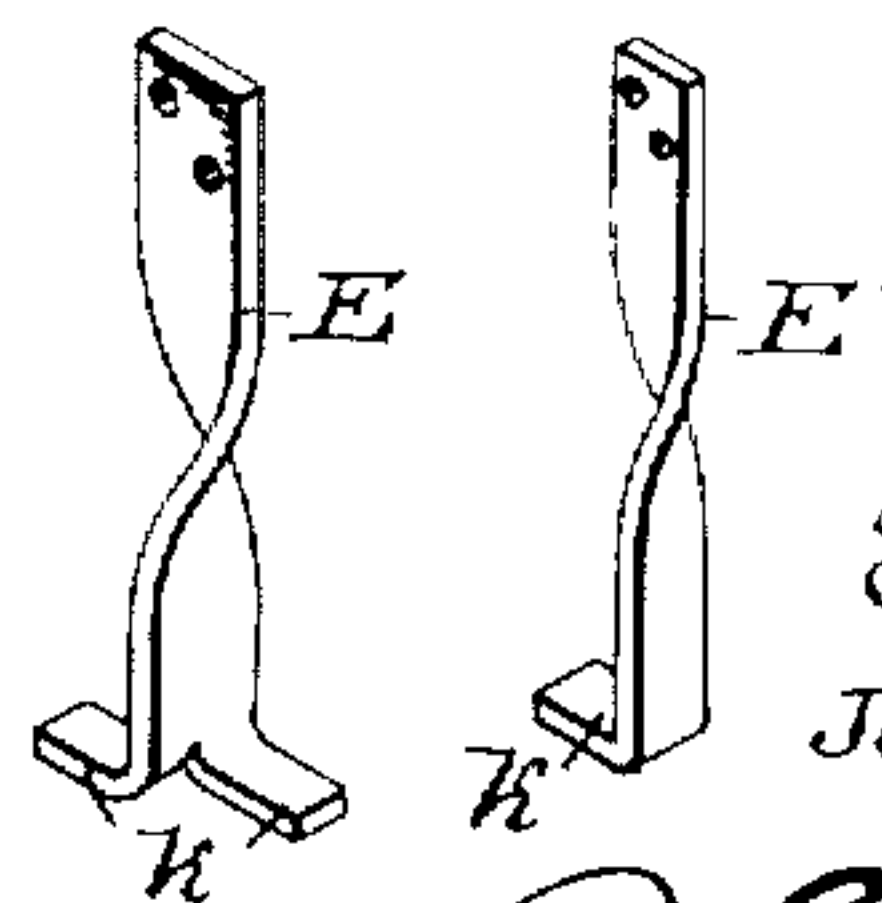


Fig. 5.



Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN SMITH, OF KANSAS CITY, MISSOURI.

## FIRE AND WATER PROOF CEILING.

SPECIFICATION forming part of Letters Patent No. 407,376, dated July 23, 1889.

Application filed March 20, 1889. Serial No. 303,974. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN SMITH, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Fire and Water Proof Ceilings, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to certain improvements in fire and water proof ceilings, having for their object readily to extinguish and prevent the communication of fire from one floor or story to another of a building; also, to permit of the drainage of waste water after the extinguishment of the fire; and to these ends the nature of the invention consists of the combination of the parts and their construction, as will fully appear from the following description, in which—

Figure 1 is a broken-away perspective and partly-sectional view of a portion of a brick structure embodying my invention. Fig. 2 is a detailed perspective partly-sectional view of a feature of my invention. Fig. 3 is a sectional elevation, on a somewhat reduced scale, taken through Fig. 1. Fig. 4 is an enlarged detailed perspective partly-sectional view of a feature of my invention, and Fig. 5 shows perspective views of the two forms of suspenders or hangers used in connection with the brackets that support the corrugated ceiling.

In carrying out my invention I employ sections or sheets of corrugated iron B to form the ceiling, which are supported upon brackets D, disposed at intervals in parallel planes with the direction of the length of the structure. These brackets are in their general cross-section triangular or provided with two ledges *b b*, except where they rest against the walls of the house or structure, in that case being formed with but one ledge or shelf *b*, the purpose of which is apparent. These brackets are each formed with upward-extending parallel plates having between them a space or slot *f*, while the upper edges of said extensions or plates are extended into lateral flanges provided with openings *m*, which receive plastering.

The spaces or slots *f* of the brackets D receive hinges or brackets E E', the lower ends of which are formed one with a single arm

or flange *k*, while the other is provided with two flanges or arms *k*, which take in the spaces *o* of the brackets under the shelves or ledges *b b*. The vertical portions of the suspenders or hinges E E' are twisted so as to cause one portion to stand in a plane at right angles to the other portion, thus permitting the upper portion to rest sidewise against and be readily secured to the floor-joists overhead. Upon the lateral flanges of the extensions of the brackets D at their ends are secured narrow plates or bars *e*, having coincident apertures with apertures of said flanges, said plates or bars effecting the initial holding together of the brackets.

Along the walls of the structure are disposed angular plates *h*, at the rear and front resting upon the narrow plates or bars *e*, it may be, while those at the sides rest directly upon the brackets, or, rather, upon their upward-extending plates and the lateral flanges. These angular plates prevent communicating to the walls of dampness in case of the saturation of the cement filling, presently described, which would occur from the use of water in the event of the building taking fire.

C is a cement filling introduced above the corrugated ceiling to a suitable depth, and into which the joists are embedded to prevent the communicating of the fire to the next floor or story. In the upper surface of this filling of cement are formed gutters *g g*, at suitable intervals apart, to drain or carry off the waste water, the same passing off at the rear through short nozzle-like spouts G, which are provided with caps *l*. This, however, is not permitted until the extinguishment of the fire, the caps *l* being kept on the spouts G during the fire, the water thus being permitted to rise, say, a couple of inches above the floor, at which point are applied in the same or rear wall similar spouts G' G', thereby keeping the water at that level.

To the drain-spouts G G' may be applied additional spouting leading below to the ground. The spouts or pipes G G', more particularly the former pipes, serve also, when not used as above pointed out, as a means of ventilation.

If desired, the brackets, instead of being suspended by means of the hangers or suspenders, may be fastened directly to the joists.



The hangers or suspenders, however, provide for space above the cement filling for ventilation or the circulation of air-currents in between the joists and in under the floor.

5 The spaces provided by the arched surfaces of contact of the corrugated sheets or sections B with the brackets D admit of the decoration of the latter thereat with various ornamental figures, as panels, rosettes, scroll-work, or any kind of corrugated iron; also, the outer corrugated sheets or sections of iron forming the ceiling may be lined upon the inside or outside with tarred paper, thus preventing rust from steam, water, or damp  
15 air. A stand-pipe may be disposed upon each floor for flooding the same in case of fire.

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

20 1. The fire-proof ceiling having its corrugated iron sections or sheets resting upon the ledges or shelves of brackets, in combination with suspenders or hangers having their inner ends adapted to enter said brackets and to take in under the ledges or shelves of the  
25 brackets, their upper ends being adapted for connection with the floor-joists above, substantially as set forth.

30 2. In a fire-proof ceiling, the brackets having a ledge or shelf to support corrugated iron sections or sheets and upwardly-extended parallel plates formed with lateral flanges at their upper edges, substantially as set forth.

35 3. In a fire-proof ceiling, the combination of the corrugated ceiling plates or sheets,

the hollow brackets having ledges or shelves and their upwardly-extended parallel plates formed at their upper edges with lateral flanges having apertures therein, the hang- 40 ers or suspenders having lateral arms or flanges let into the brackets and taking in under the ledges of said brackets and having their upper ends adapted for connection to the floor-joists, the filling of cement, and the an- 45 gular plates applied to the walls and between the same and the cement filling, substantially as specified.

4. In a fire-proof ceiling, the combination of the corrugated iron sheets or sections, the 50 brackets supporting said sheets or sections, the suspenders or hangers for said brackets, and the cement filling having gutters at intervals in its upper surface, and the outlet spouts or pipes taking the waste water from 55 said gutter, substantially as specified.

5. In a fire-proof ceiling, the combination of the corrugated iron sheets or sections, the brackets supporting said sheets or sections, the suspenders or hangers for said brackets, 60 the filling of cement, the nozzle-like spouts or pipes having caps applied to their outer discharging ends, and the additional similar pipes or spouts arranged above the next floor, substantially as set forth. 65

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

JOHN SMITH.

Witnesses:

E. G. FISCHER,  
A. A. HIGDON.