

J. E. MULFORD.
Fire-Proof Building.

No. 139,415.

Patented May 27, 1873.

FIG. 1.

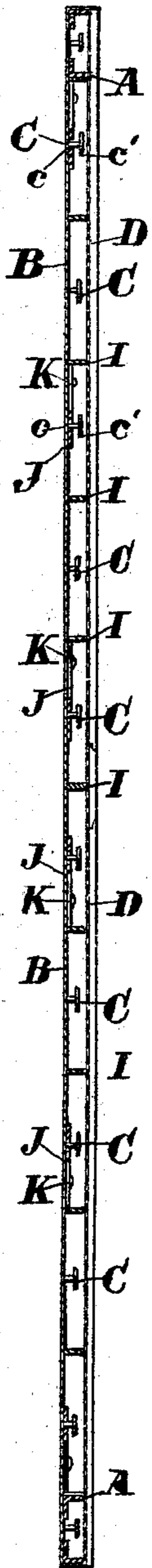
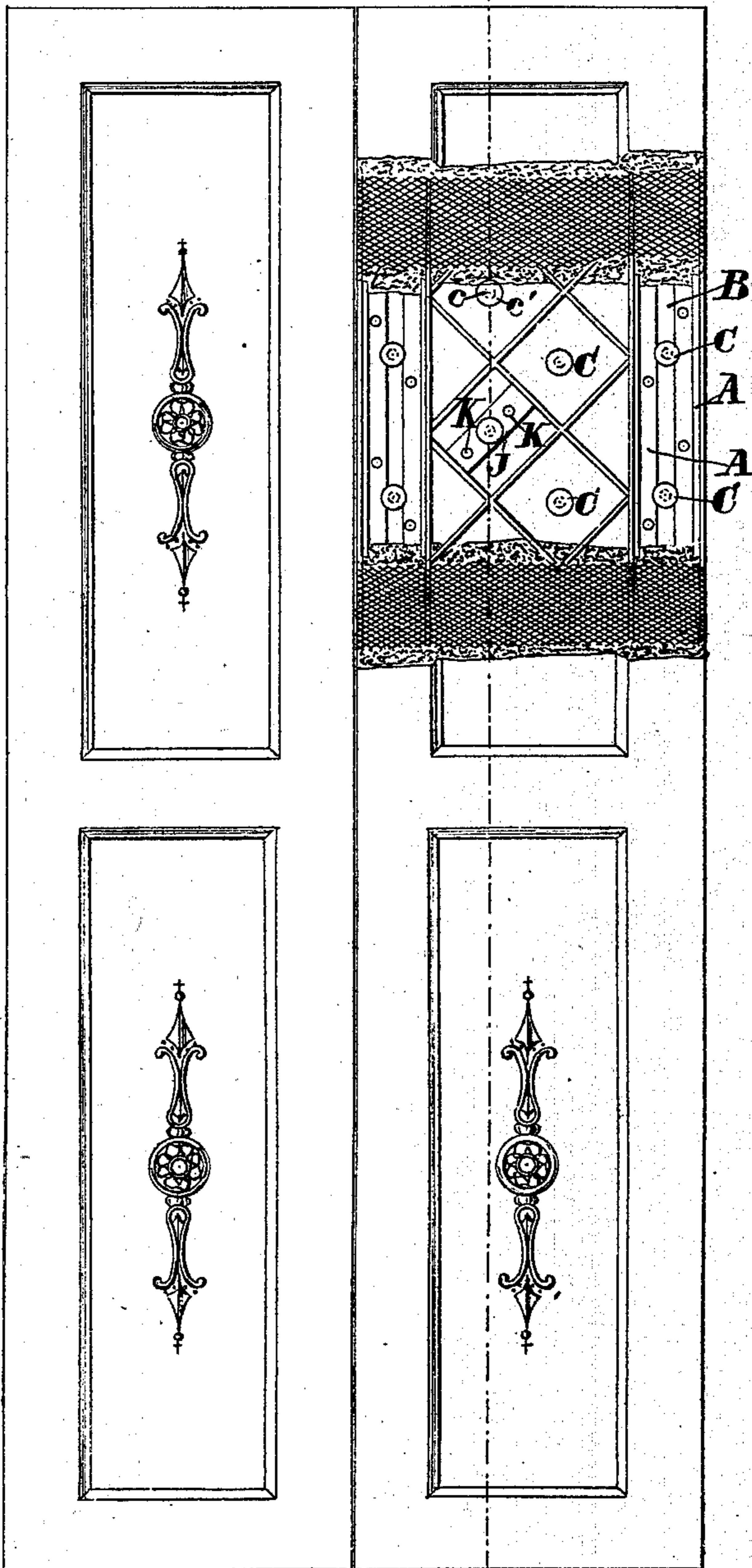


FIG. 2.



WITNESSES:

Gas. L. Cwin
Walter Allen

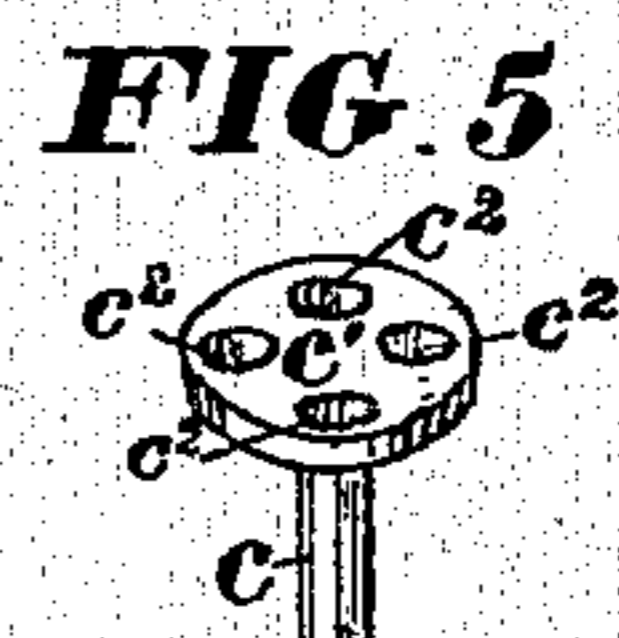
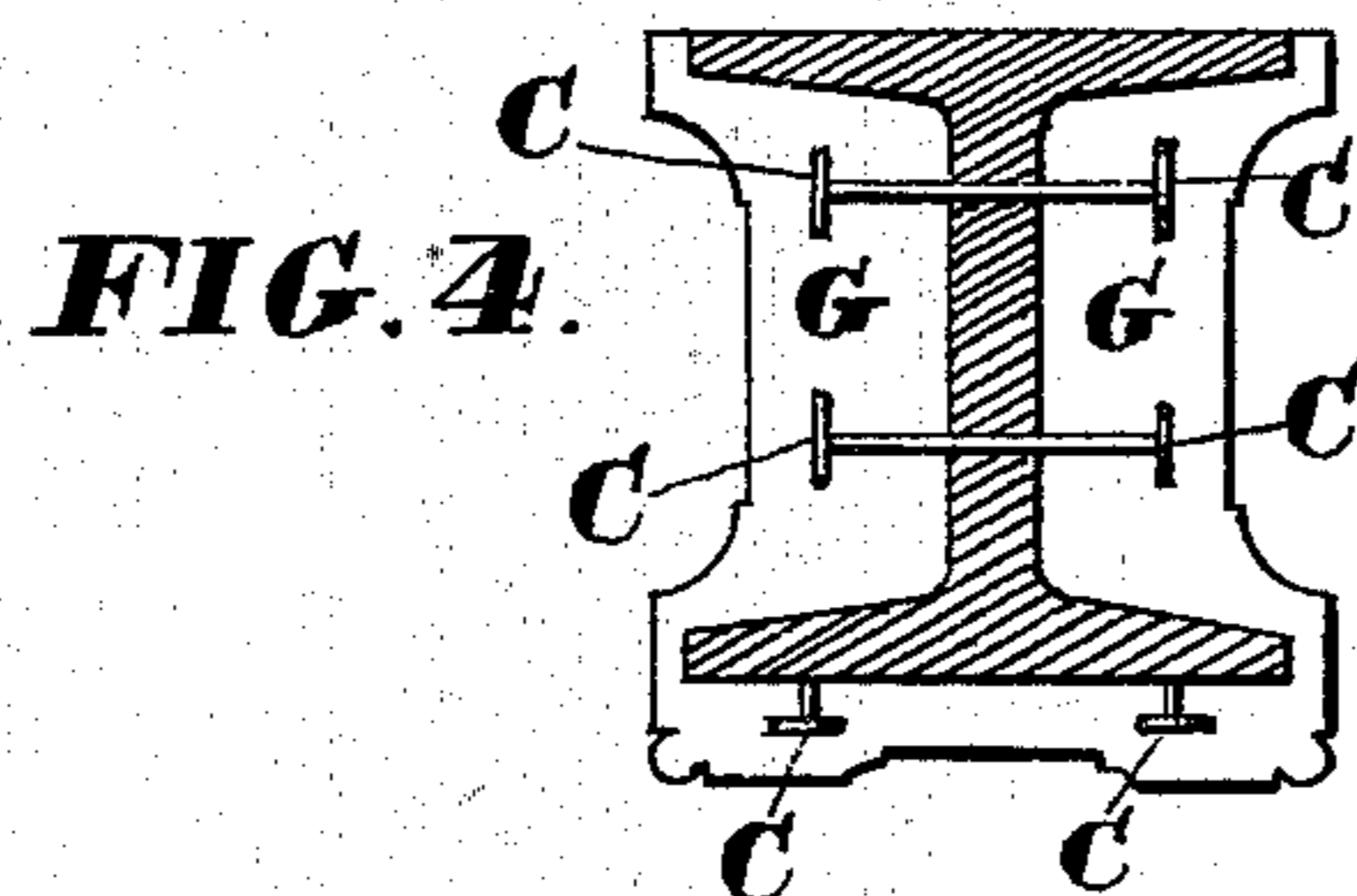
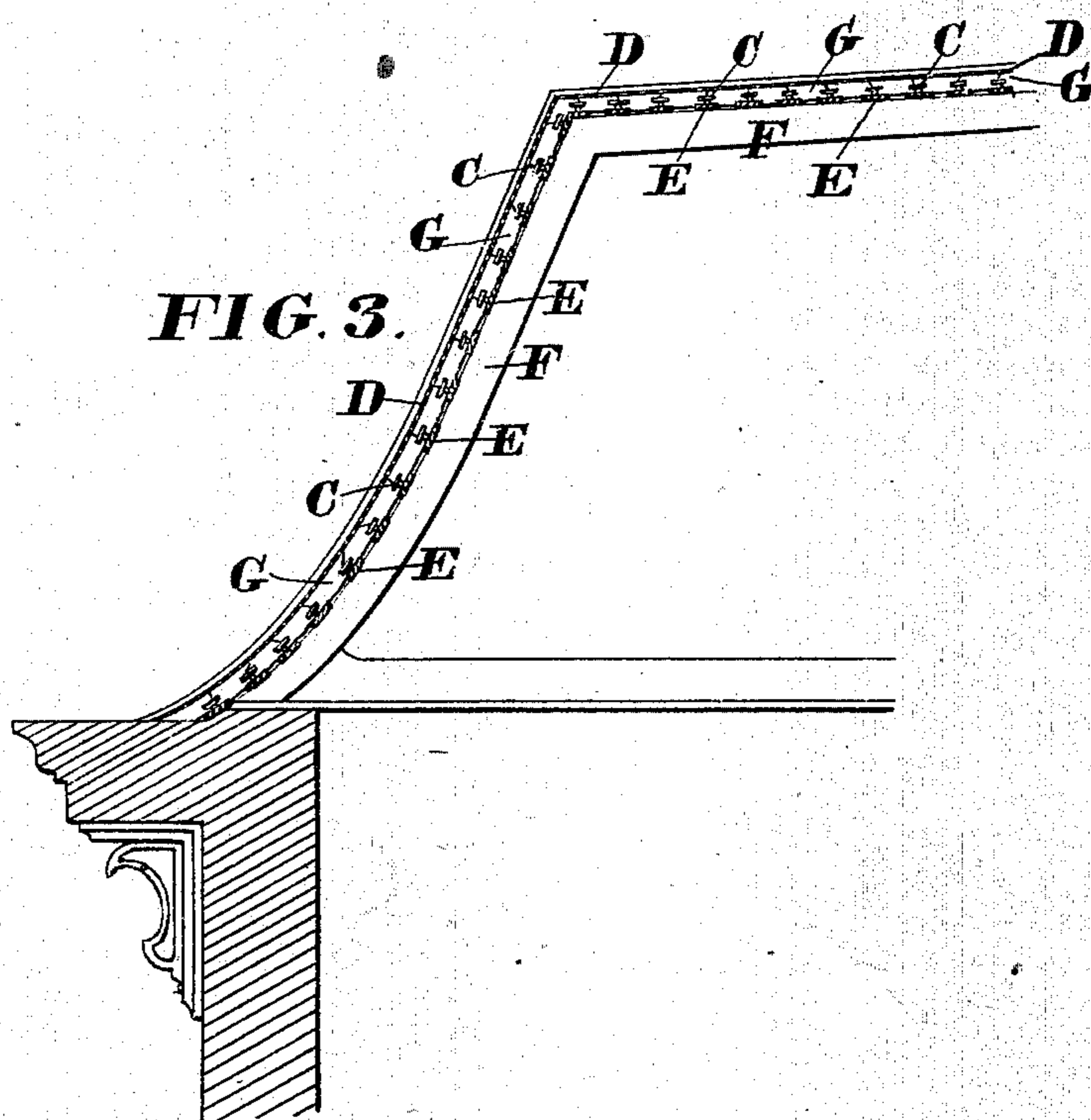
INVENTOR:

John E. Mulford
By *Knight & Sons* Attorneys.

J. E. MULFORD.
Fire-Proof Building.

No. 139,415.

Patented May 27, 1873.



WITNESSES:

Geo. L. Ewin
Walter Allen

INVENTOR:

John E. Mulford
By Knight Bros Attorneys.

UNITED STATES PATENT OFFICE.

JOHN E. MULFORD, OF NEW YORK, N. Y.

IMPROVEMENT IN FIRE-PROOF BUILDINGS.

Specification forming part of Letters Patent No. **139,415**, dated May 27, 1873; application filed February 25, 1873.

To all whom it may concern:

Be it known that I, JOHN E. MULFORD, of the city, county and State of New York, have invented certain Improvements in Applying Fire-Proof Material to Buildings and other Structures, of which the following is a specification:

My invention relates to the application of fire-proof or fire-resisting material to metallic and other structures, such for example as doors, shutters, buildings, partition-walls, beams and girders, iron safes, bank-vaults, steam-vessels, boilers, pipes, &c.; and it consists in means employed to secure the fire-proof material, protect it from injury, and prevent its detachment in use or under violence incident to a fire.

In the accompanying drawing, Figure 1 is a vertical longitudinal section, which may represent a portion of a fire-proof door or shutter, or of the wall of a building or vault or other structure illustrating my invention. Fig. 2 is an elevation of the same with parts of the fire-proof material and metal work omitted. Fig. 3 is a vertical section representing adjacent parts of a wall and Mansard roof, and illustrating the application of the invention to this class of structures. Fig. 4 is a transverse section of a girder illustrating the application of the invention to this class of structures. Fig. 5 is a detached perspective view of one of the anchoring devices hereinafter described.

A A represent parts of a frame-work of angle-iron, or bars of other suitable form. B B are plates of metal riveted or otherwise secured to the frame A, and constituting the back of the structure. Riveted in these rear plates, and projecting toward the front, are studs C of mushroom or T form, or any analogous or equivalent shape which will adapt them for the purpose intended, namely, to anchor and secure the fire-proof material as hereinafter explained. I prefer to form these studs with stems c , and heads or flanges c^1 of circular, square, or other form projecting all around the said stems, and parallel or nearly so with the back plates B. When these heads are made of large size they are perforated as shown at c^2 in Fig. 5. D D are webs of wire-cloth or netting attached at their edges to the frame A, and fastened also to the heads of the

studs C, either in close contact or tied by wires. I I are bars, preferably of metal, crossing each other at suitable angles to form cells of square or other preferred form, adapted to receive and support the plastic fire-proof material. Some of the cells are formed with bottom plates J, which, with bolts or rivets K, form the means of attaching the entire cellular frame or casing to the plates B, if these are used; but for many structures the attachment of the ends of the bars I to frames A will suffice, and the plates B may be entirely dispensed with. In either case the structure of the cellular frame-work is sufficiently yielding to accommodate itself to inequalities in expansion and contraction under changes of temperature.

The foregoing description refers chiefly to Figs. 1 and 2 of the drawings, but it will be seen to apply in its leading principles to the illustrations given in Figs. 3 and 4.

The Mansard roof shown in Fig. 3 may be made entirely of non-combustible material. E may represent lathing or sheeting of metal applied on a metallic frame, F, and affording attachment for flanged studs C as before described, and the reticulated webbing D may then be applied as on the walls, doors, or shutters.

In the beam or girder shown in Fig. 4, the flanged studs C may project on both sides of the central web, nearly flush with the flanges or heads of the beam. The reticulated webbing or net-work is not required in these structures of comparatively small area.

In all illustrations G represents the fire-proof matter, which consists of asbestos mingled preferably with calcined gypsum or similar material, and united by the aid of lime-putty, or other suitable cement. This compound is applied in a plastic state after the manner of plaster, completely filling the cells or cavities prepared for it, and projecting beyond the metallic fastening appliances C D, so as to completely coat and cover the metal, and effectually protect it from fire. This fire-resisting material, when hardened by atmospheric exposure, possesses a hard and durable surface adapted to be painted and decorated according to taste; and at the time of its application, it may, if desired, be molded in ornamental forms. It shrinks but little in

drying, is not liable to crack, and when hard still possesses sufficient elasticity to adapt it to accommodate itself to the expansion and contraction of the metallic frame-work under changes of temperature.

The composition above described is well adapted for plastering of all kinds on lathing of any description, and is not limited in its application to metallic frame-works. It is also applicable to the walls of vaults and buildings to render them fire-proof.

The following is claimed as new:

1. The fire-proof or fire-resisting composition herein described, adapted for application

in the form of plaster to walls or structures of any description.

2. The flanged anchoring-studs C, employed in combination with a fire-proof plaster, substantially as herein specified.

To the above specification of my improvements in applying fire-proof material to doors, shutters, and other structures, I have hereunto set my hand this 23d day of January, 1873.

JNO. E. MULFORD.

Witnesses:

OCTAVIUS KNIGHT,
WALTER ALLEN.