

No. 619,430.

Patented Feb. 14, 1899.

J. A. McKIM.
FIREPROOF BUILDING.

(Application filed June 20, 1898.)

(No Model.)

Fig. 1.

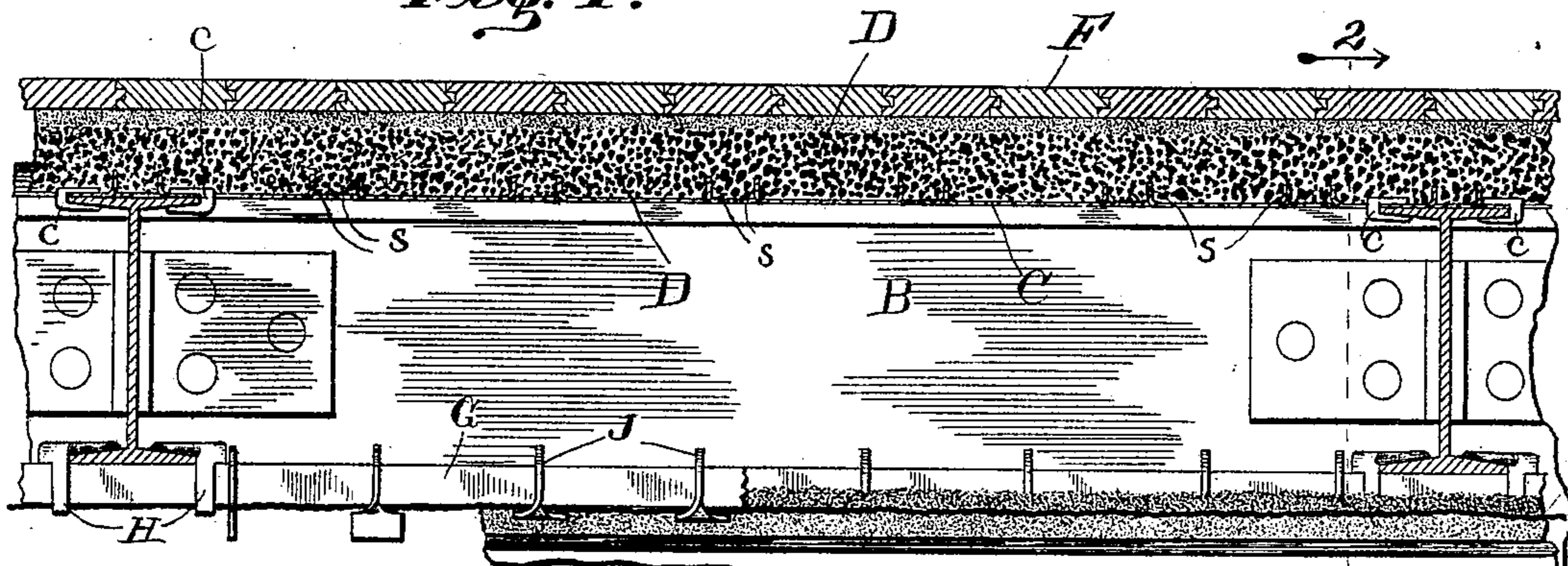


Fig. 2.

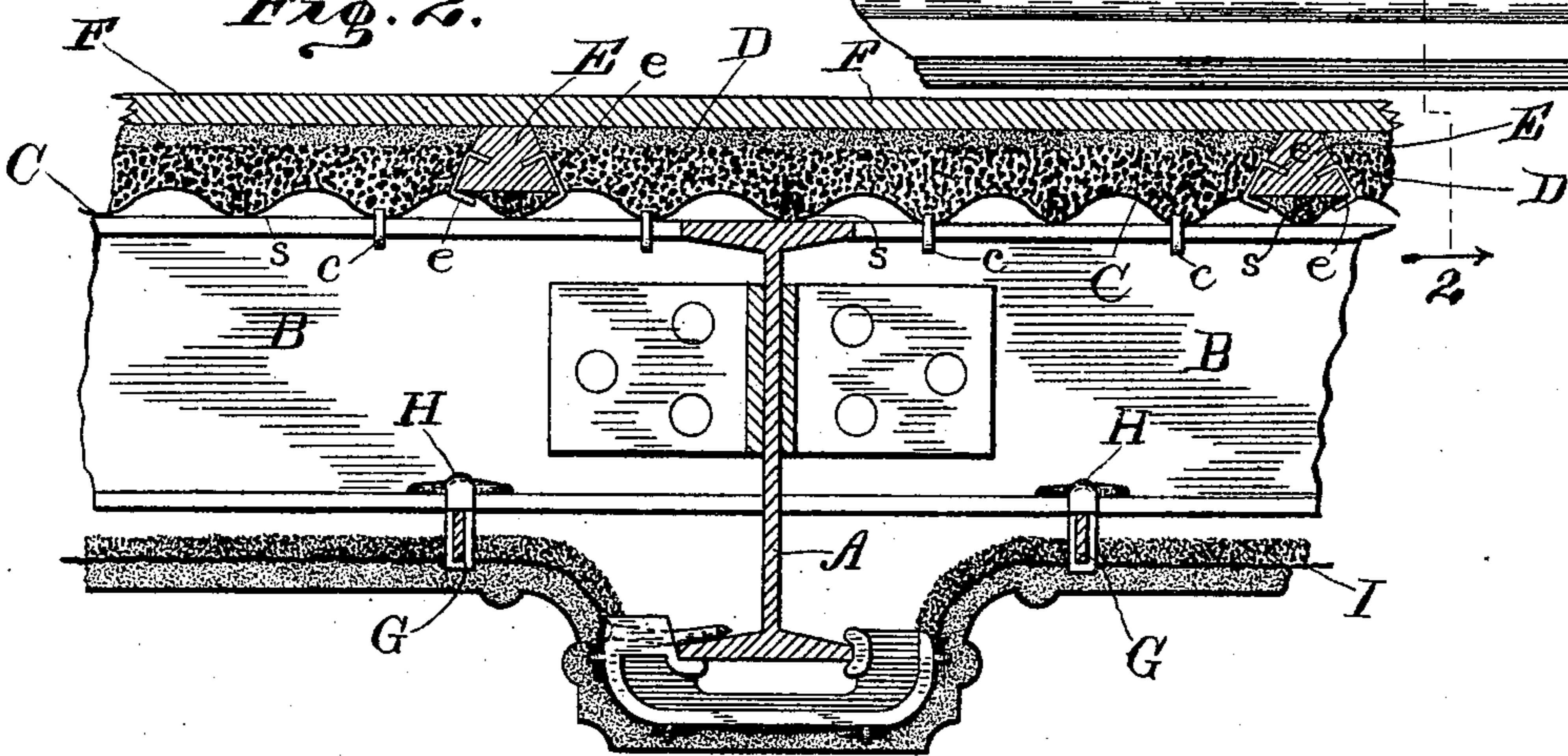


Fig. 3.

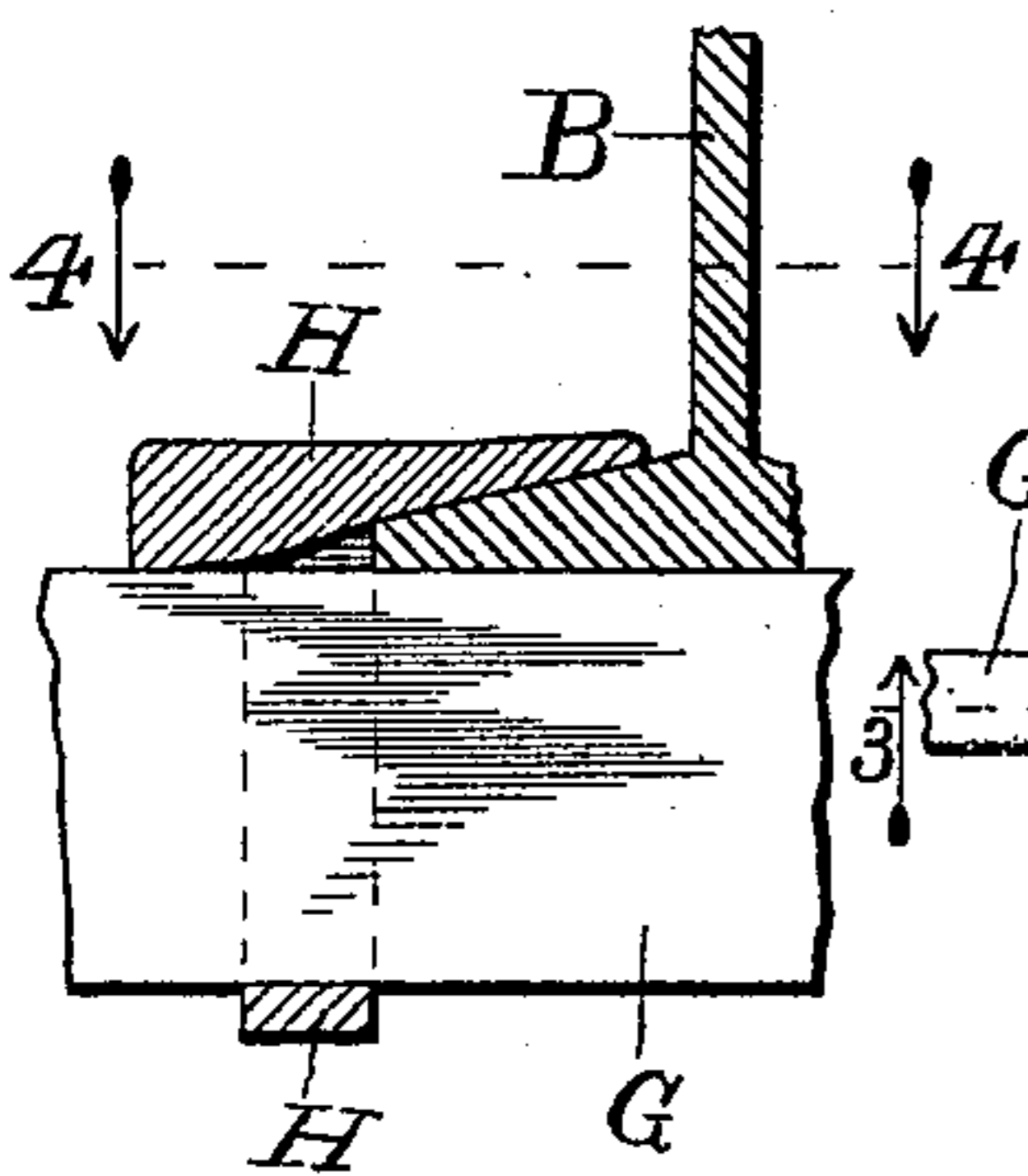


Fig. 4.

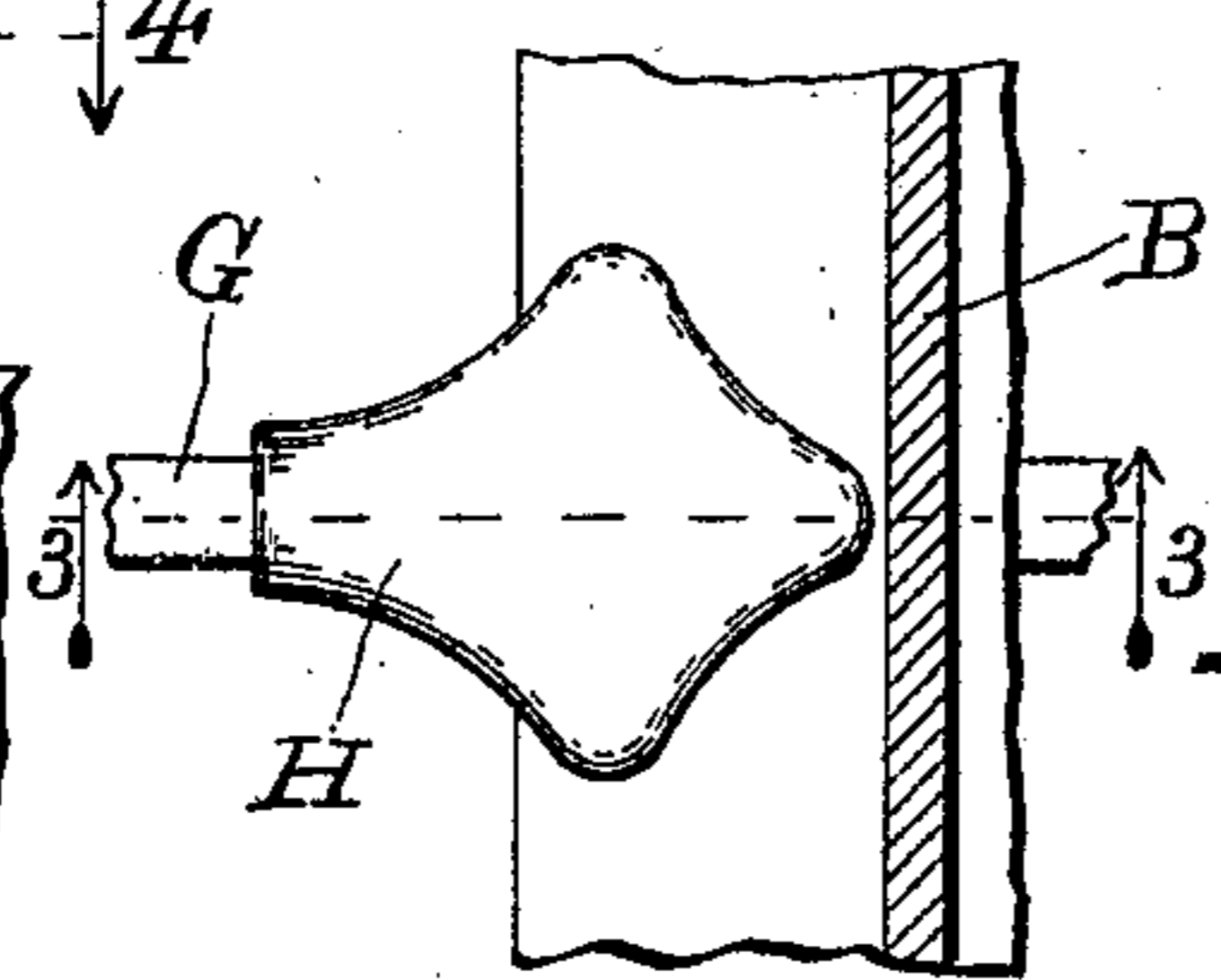


Fig. 5.

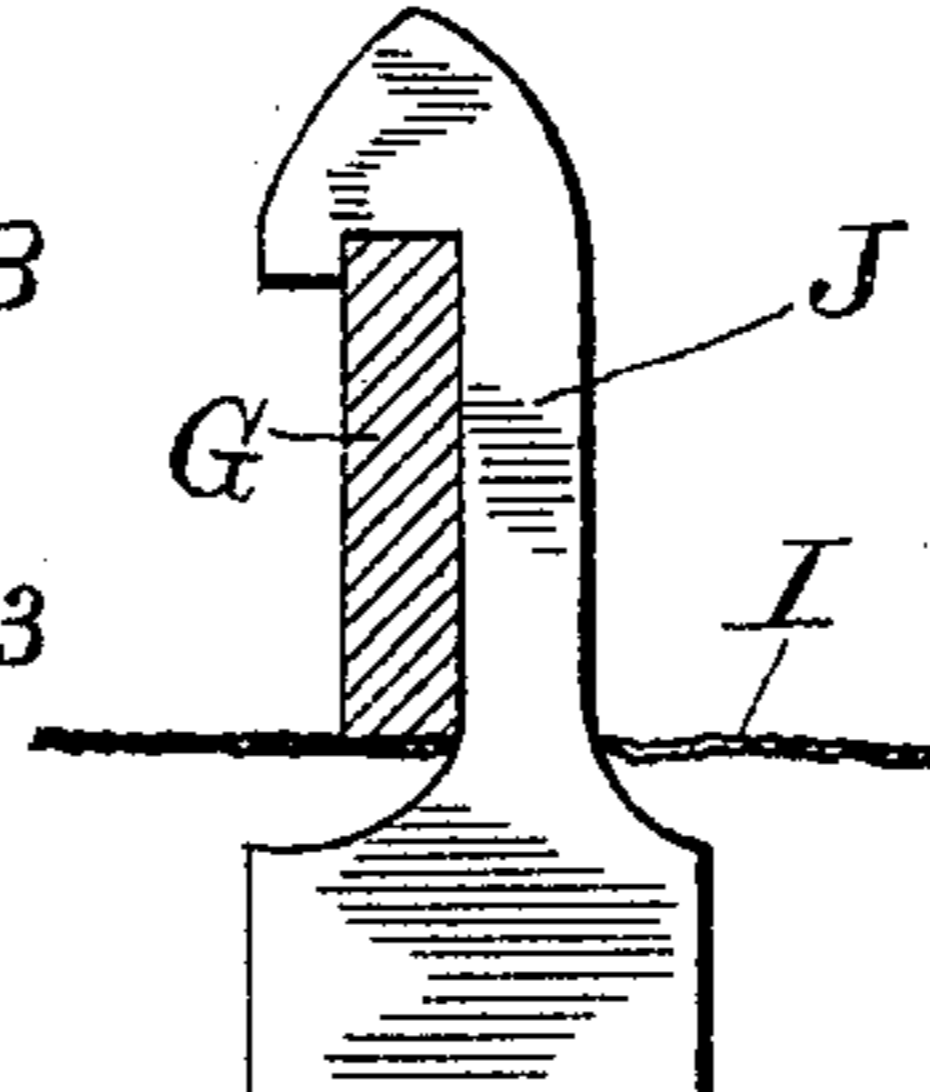
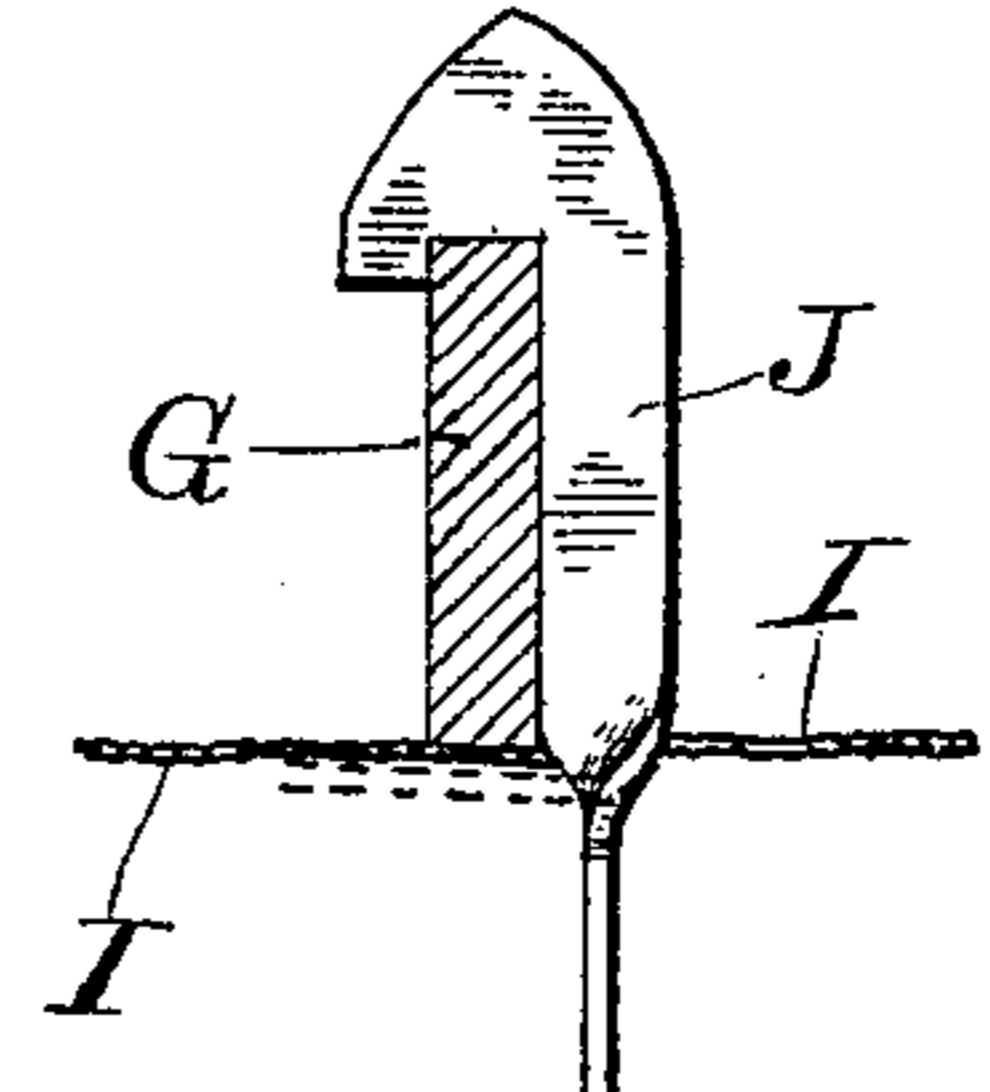


Fig. 6.



WITNESSES:

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JAMES A. MCKIM, OF INDIANAPOLIS, INDIANA.

FIREPROOF BUILDING.

SPECIFICATION forming part of Letters Patent No. 619,430, dated February 14, 1899.

Application filed June 20, 1898. Serial No. 683,920. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. MCKIM, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Fireproof Buildings, of which the following is a specification.

My present invention relates to that class of fireproof-building structures comprising the floors and ceilings, which structures are mainly composed of metal beams, a combined sheet-metal and concrete floor member carried upon said beams, and light bars carrying lathing, to which in turn the ordinary plastering is applied.

Said invention consists of certain details of construction whereby the various members are strongly united together with but a comparatively small expenditure of time and labor, while the members themselves are also of an inexpensive character. A combined floor and ceiling structure built in accordance with my present invention will first be fully described, and the novel features thereof then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof and on which similar letters of reference indicate similar parts, Figure 1 is a sectional view through such a structure, illustrating various features of my invention; Fig. 2, a sectional view as seen from the dotted line 2 2 in Fig. 1; Fig. 3, a detail sectional view illustrating particularly the construction of one of the lath-carrying-barsupports; Fig. 4, a detail view showing such support in top plan; Fig. 5, a detail sectional view showing one of the lath-supporters in the position it occupies when in use, but before it is twisted and bent to secure the lathing in place; and Fig. 6, a similar view, but showing the lath-supporter twisted by means of full lines and the bent position by means of dotted lines. These various positions are also shown on a smaller scale in Fig. 1.

In said drawings the portions marked A represent the main-frame beams; B, the floor-beams; C, the corrugated iron forming the lower member of the principal floor structure; E, the nailing-strips embedded in concrete; F, the wooden-surface floor; G, the lath-carrying bars; H, the supports for said bars, where-

by they are connected to the floor-beams; I, the lathing, and J the lathing-supporters by which said lathing is connected to the lath-supporting bars.

The beams A and B are of the usual and well-known form. The floor structure, composed of the corrugated sheet metal C and concrete D, is also similar to former structures of this character. It is, however, secured to the floor-beams B in a peculiar manner. Slits are cut at suitable intervals in the corrugated metal at the bottom of the valleys and forked clamps *c* are inserted in these slits and clamped over the upper flanges of the floor-beams B and the adjacent portion of the metal of the corrugated member C, thus uniting said floor and said corrugated member strongly together, as is best shown in Fig. 1. Perforations are punched at intervals in the bottoms of the valleys in the corrugated metal, and the resulting ears *s* project upwardly into the concrete and serve to bind the metal and concrete strongly together and add largely to the strength of the floor structure. These ears are so arranged that before the floor structure could be crushed they would be sheared off by the surrounding concrete. The nailing-strips E are likewise in themselves of a well-known form. They are, however, also secured in place in a peculiar manner. Small perforations are made in the corrugated sheet-metal member C at the points where the edges of these nailing-strips rest, and wide staples *e* have one prong extended through said perforations, while the other prong is driven into the side of the nailing-strip, as best shown in Fig. 2. The floor F is preferably composed of ordinary tongued-and-grooved flooring, and is nailed to the nailing-strips E in the usual and well-known manner.

The lath-carrying bars G are in themselves plain straight bars of suitable size. I have found one and one-fourth inches by one-fourth inch bar-iron to be a desirable size and material for this purpose. They are set below the floor-beams B and are arranged edgewise in order to leave an air-space between the plastering and said beams and also to get the greatest strength possible with the least expenditure of material. Being small and thin, a special means is necessary to hold

them properly in place. I have therefore devised the supporting-clamps H, which, as shown in the drawings, are of a peculiar shape and are preferably formed of malleable iron. The flanges on the upper ends of these clamps are wide, as shown in Fig. 4, and comparatively thin and are adapted to be driven over the lower flanges of the floor-beams B and by reason of their yielding character will bend to fit the surfaces of said flanges closely. When driven up tightly, the lath-supporting bars are drawn forcibly against the lower surfaces of the floor-beams and are strongly held there, while the wide points or flanges of the supporting-clamps H prevent them from tipping in either direction, as will be readily understood by an inspection of the drawings, especially Fig. 4.

The lathing I may be either wire lathing or perforated sheet metal. In either case suitable perforations are provided therein for the reception of the lathing-supporters J. The form of these lathing-supporters is best shown in Fig. 5. They are stamped out of heavy sheet metal and their upper ends hooked over the lath-supporting bars G, while their wide lower ends extend below the lathing I. At the point with which the lathing comes in immediate contact in use these supporters J begin to flare out rapidly. The consequence is that when the lower end is twisted from the position shown in Fig. 5 to that shown in Fig. 6 the inclined edges of this flaring portion come forcibly against the adjacent portions of the lathing, and thus draw it up tightly against the under side of the lath-carrying bars G, thus bringing said parts strongly together and under a tension. When this has been done, the lower end is bent to one side, as indicated by the dotted lines in Fig. 6, and the structure is ready to receive the plastering.

In building my improved fireproof floors and ceilings the first step after the frame (including the floor-beams) is erected is to secure the lath-carrying bars in place by means of the supporting-clamps H. I then secure the lathing I in position by means of the lathing-supporters J. I then cover the inner side of the lathing with a thin coating of cement or grouting, so that the dead-air space under and around the beams shall always be maintained, even if the plastering should become knocked off from the under side. This coating, too, as it fits around the parts G and H, serves to insure that they shall remain in place. The floor structure composed of the

parts C, D, and E is then usually put in position, which completes the structure in its rough form. Afterward, as may be convenient, the plastering is applied to the under side of the lathing and the surface floor F is nailed in place.

A peculiar clamp for supporting that portion of the lathing immediately below the main beams or girders A is shown in Fig. 2; but this is not particularly described herein, as it forms the subject-matter of a separate application.

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

1. The combination, in a fireproof building, of the floor-beams, a floor structure composed of the sheet metal C and concrete D, and forked clamps c whereby said structure is united to said beams, substantially as shown and described.

2. The combination, in a fireproof building, of a floor structure composed of a sheet-metal base, concrete filling, flooring-strips D, and staplese uniting said flooring-strips to said base, one prong of each of said staples passing through a perforation in said sheet-metal base and extending below the same, and the other prong being driven into the side of the flooring-strip, substantially as shown and described.

3. The combination, in a fireproof building, of the lath-carrying bars G, the lathing I, and the lath-supporters J, each of said lath-supporters being formed to pass through the lathing and with a hook on its top to engage the upper edge of the bars G, and with a wide flat lower end adapted to be bent up against the surface of said lathing and secure it tightly in place, substantially as set forth.

4. The combination, in a fireproof building, of lath-carrying bars, metal lathing having perforations therein, and lathing-supporters J passing through said perforations and hooking over said bars and provided with flaring lower ends the flaring portions whereof when said lower ends are twisted impinge against said lathing and draw the same tightly against the under side of the lath-supporting bars, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 14th day of June, A. D. 1898.

JAMES A. MCKIM. [L. S.]

Witnesses:

CHESTER BRADFORD,
JAMES A. WALSH.