

No. 705,360.

Patented July 22, 1902.

G. R. KING.

FIREPROOF FLOOR CONSTRUCTION.

(Application filed May 8, 1901.)

(No Model.)

Fig. 1.

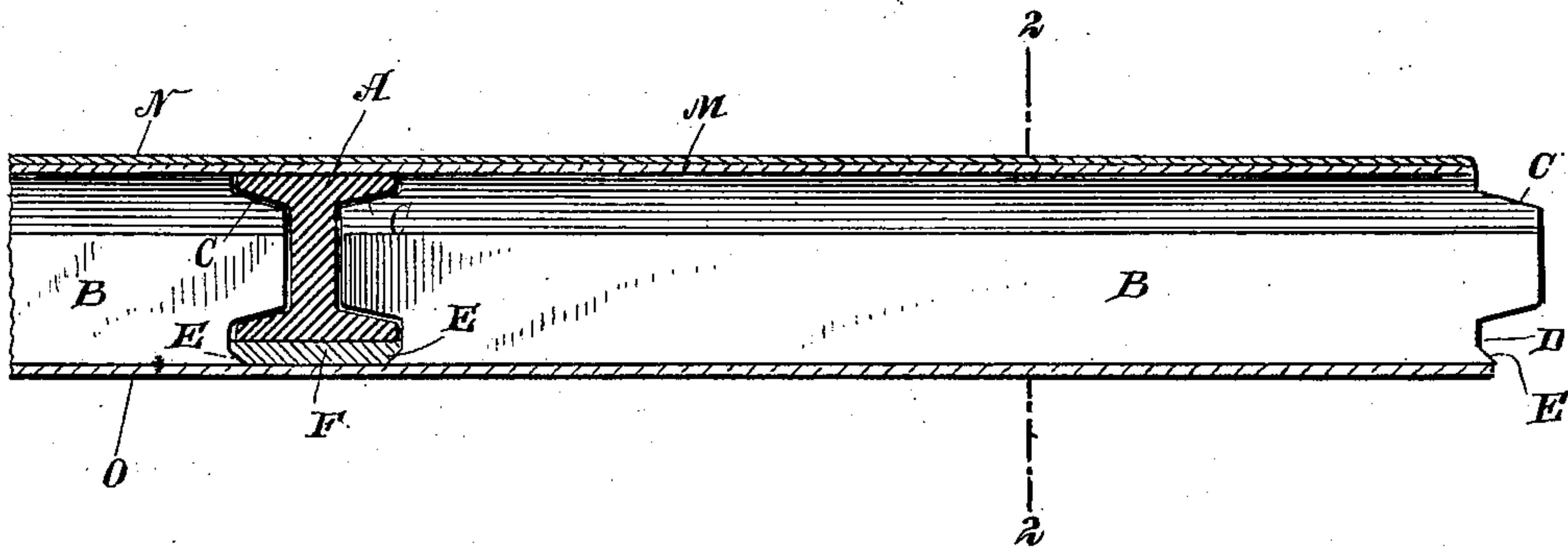


Fig. 2.

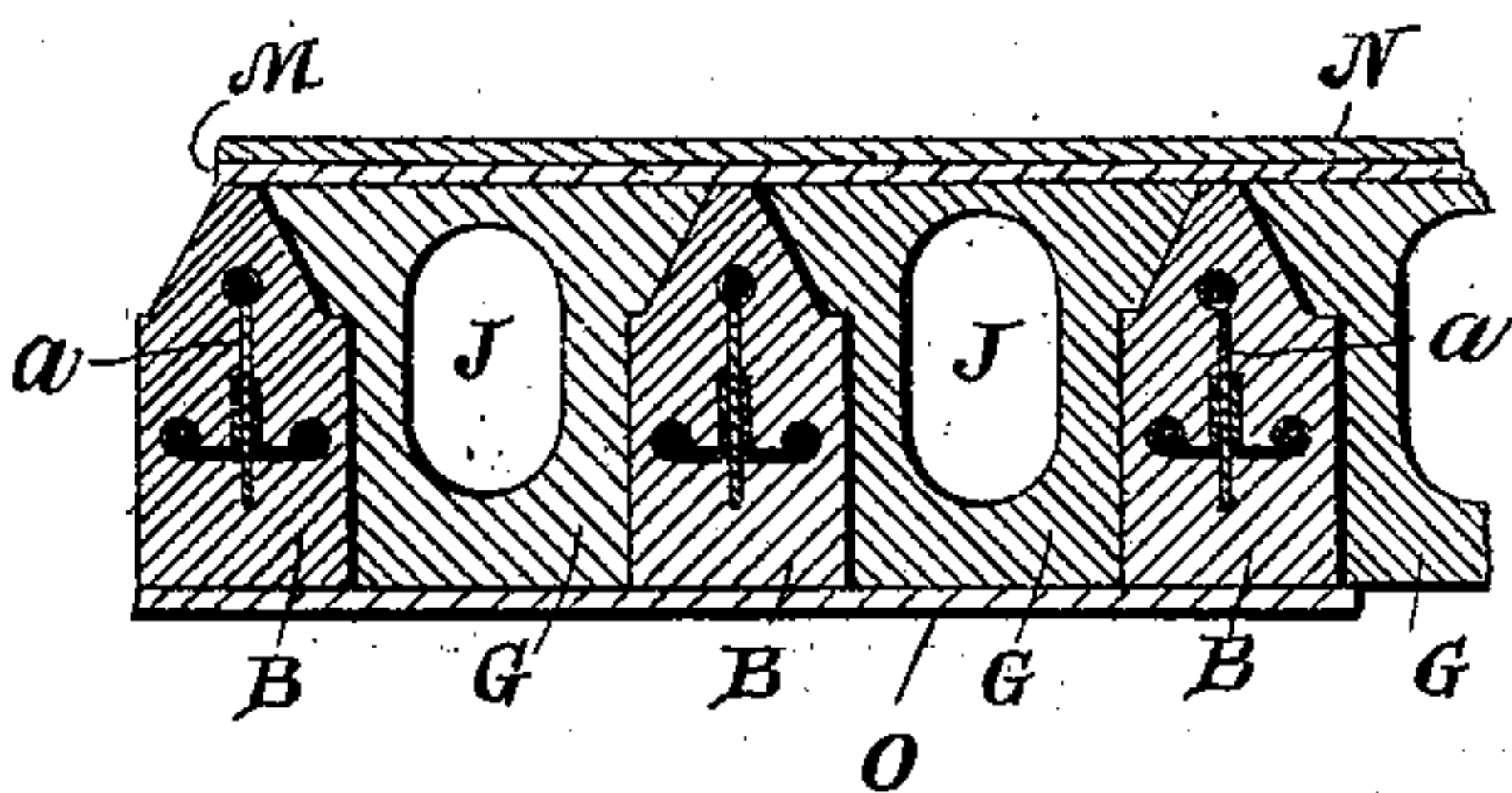


Fig. 3.

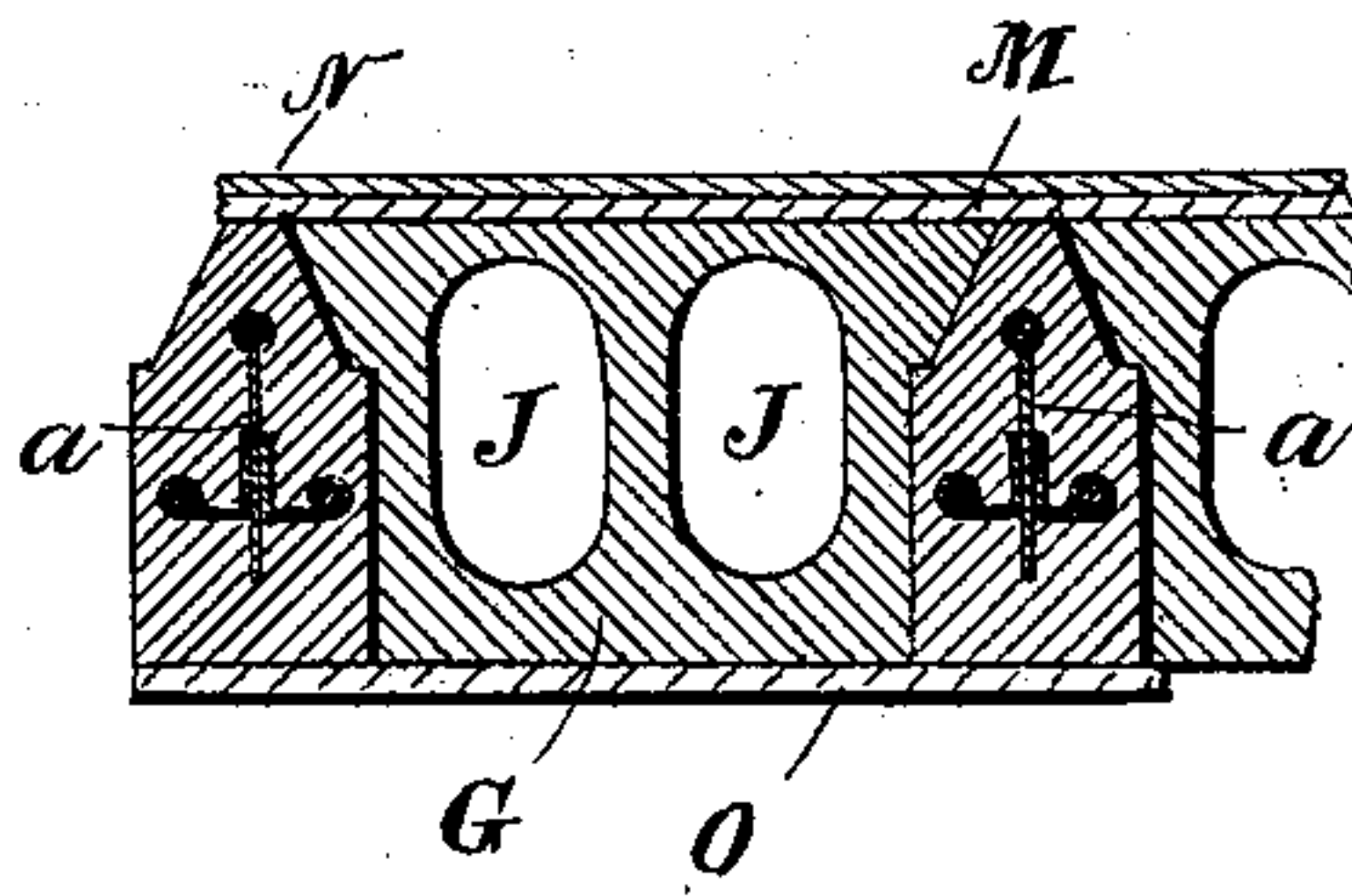


Fig. 4.

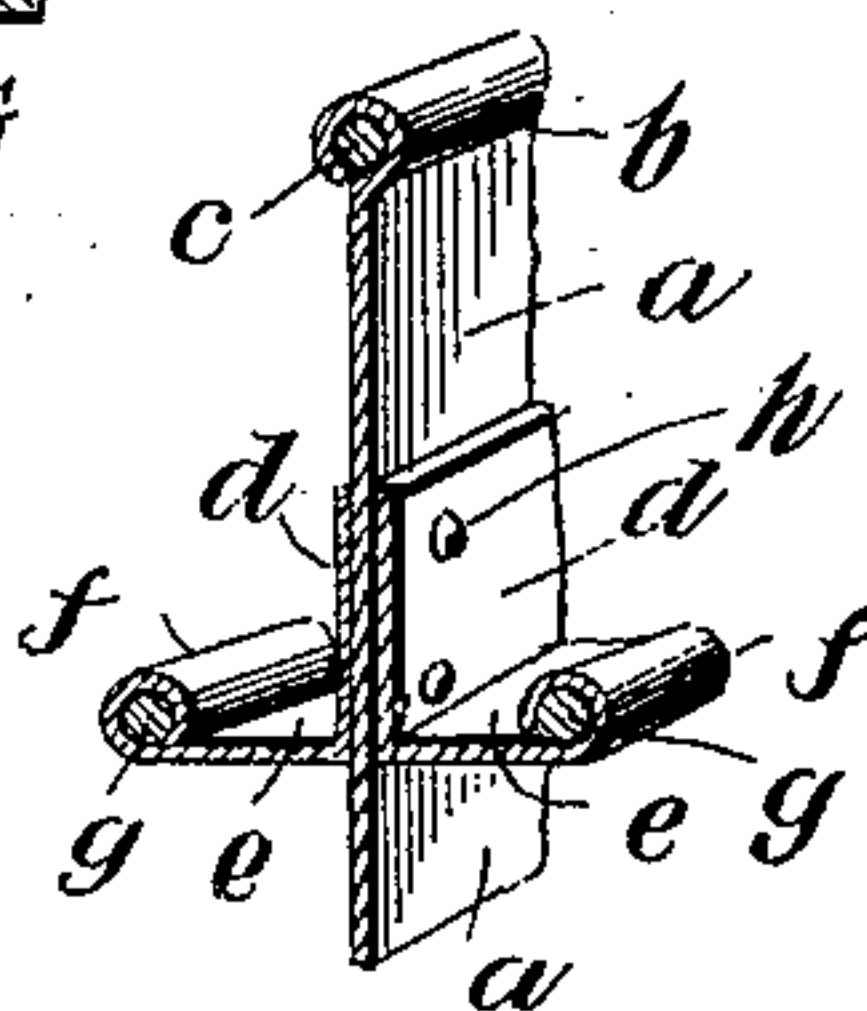


Fig. 5.

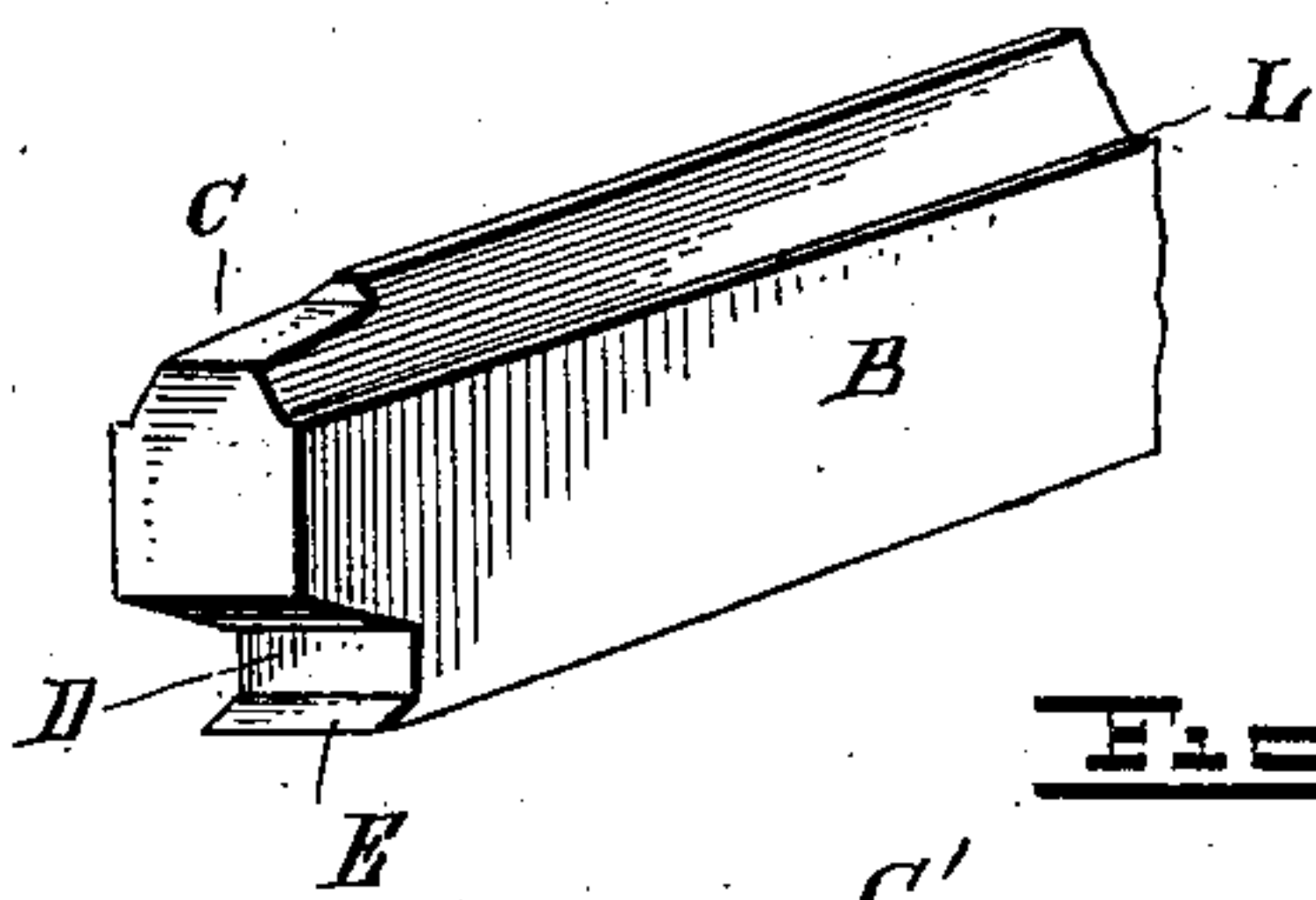


Fig. 6.

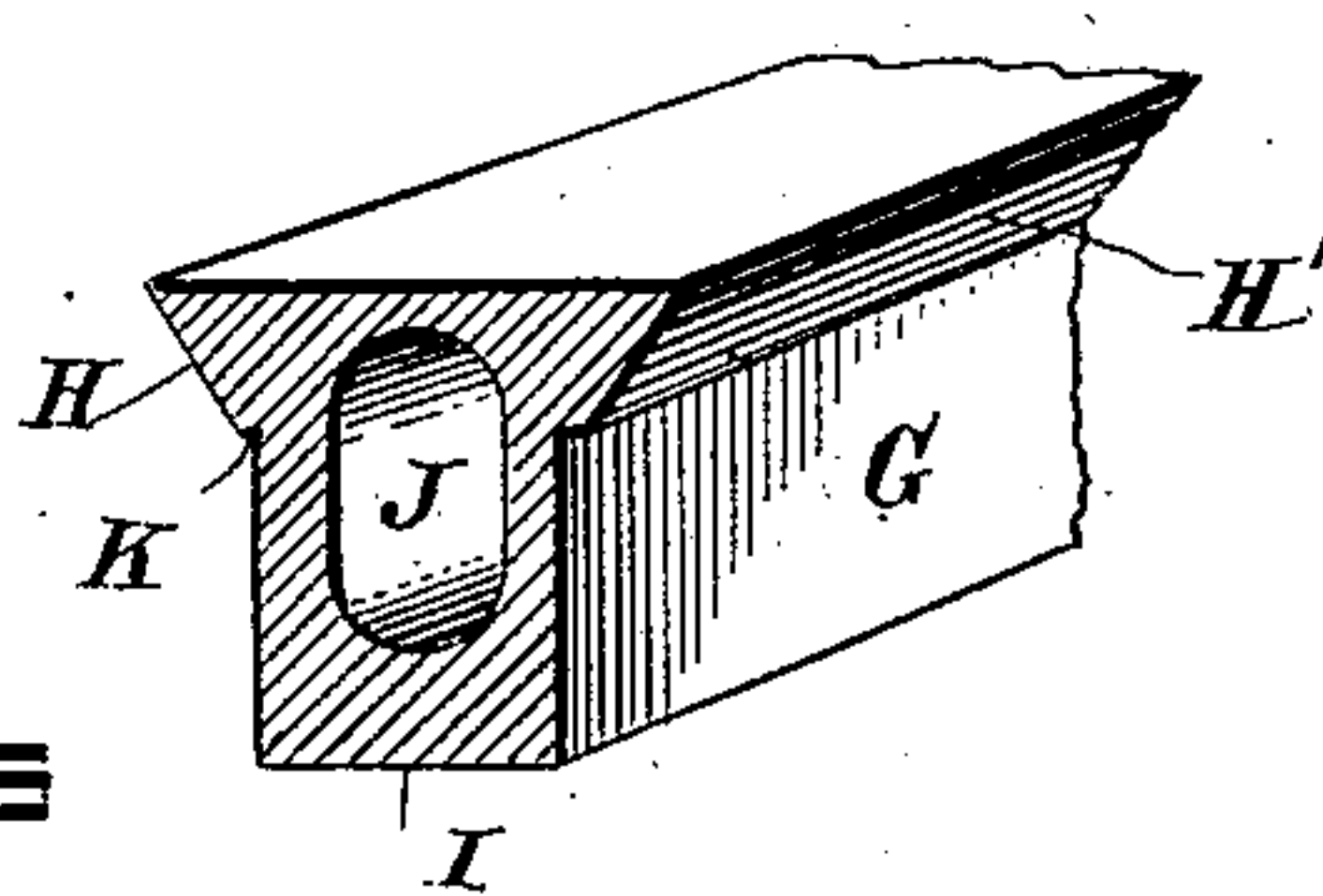
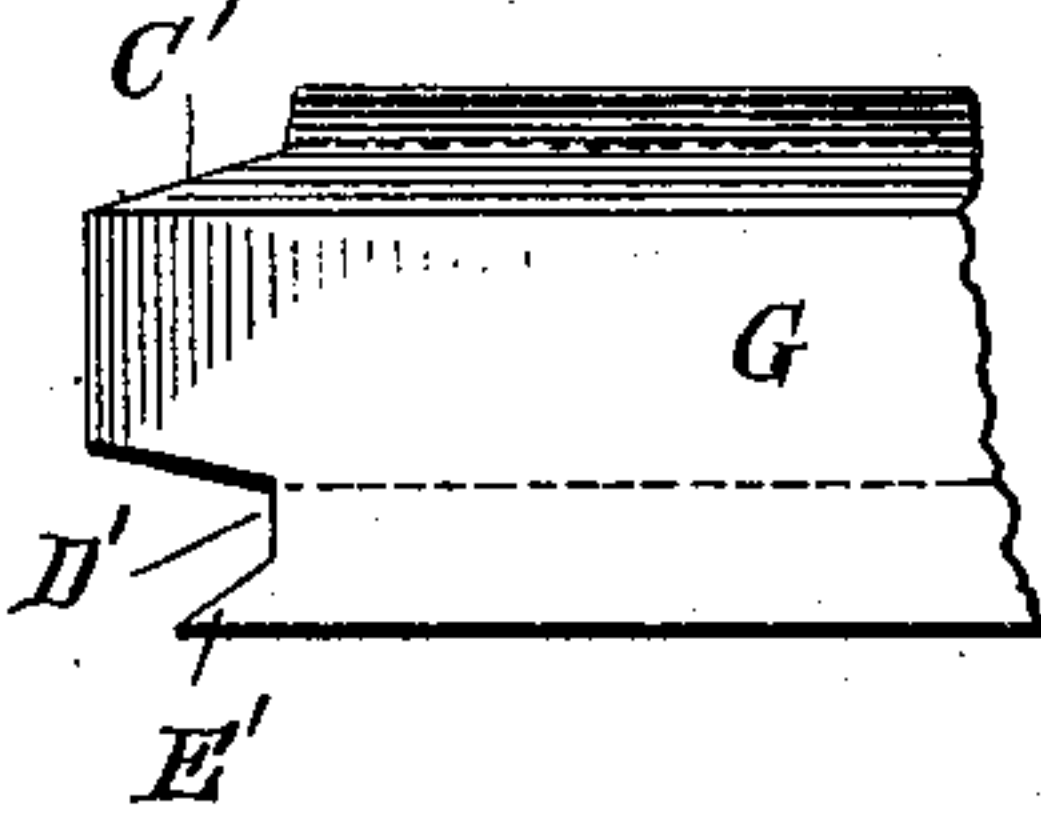


Fig. 7.



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# UNITED STATES PATENT OFFICE.

GEORGE R. KING, OF NEW BRIGHTON, NEW YORK.

## FIREPROOF FLOOR CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 705,360, dated July 22, 1902.

Application filed May 8, 1901. Serial No. 59,212. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE R. KING, a citizen of the United States, and a resident of New Brighton, Staten Island, county of Richmond, and State of New York, have invented certain new and useful Improvements in Fireproof Floor Construction, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 illustrates a vertical sectional view of one of the construction floor-beams with the ceiling and upper floor in place and one of my lintels, shown in elevation, likewise in place. Fig. 2 illustrates a vertical transverse section taken on the line 2 2 of Fig. 1. Fig. 3 illustrates a vertical transverse section taken through the lintels, showing an enlarged floor-block. Fig. 4 illustrates an end view of one of my lintels adapted to fit the I construction-beam shown in Fig. 1. Fig. 5 illustrates a perspective view of one of my floor-blocks, the same as that shown in Fig. 2. Fig. 6 illustrates a side view of one of the floor-blocks, being the kind which comes next to the construction I-beams. Fig. 7 is an end view of the metal parts of the lintels.

I will first describe the invention and then refer to the special advantages secured by me because of the same.

A, Fig. 1, illustrates an ordinary I construction-beam, such as almost universally used to-day in the construction of iron or steel fireproof buildings. They are spaced usually from three to five feet between centers. The spaces between these beams are filled in various ways to form a continuous floor. My invention consists in a new method of effecting this filling in.

B B in Fig. 1 represents a side view in elevation of what I call my "floor-lintels." End sectional views of the lintels are shown in Figs. 2 and 3 and a perspective view of the end of the lintel in Fig. 4. The lintels are shaped at their ends as shown in Fig. 4, with the flattened portion C and the undercut part D, in order that they may properly pass between the upper and lower flanges or ledges of the I-beams. If inverted T-beams or if channel-iron or other shaped beams are employed as construction-beams, then the ends of the lintels will be correspondingly shaped, so as to properly engage with and be sup-

ported upon the said construction-beams. They are made deeper than the construction-beams A and have a dovetailed or projecting ledge E at their lower ends, adapted to hold a block F against the under surface of the floor-beams A to protect the beams against fire. I prefer the adjustment should be such that these blocks or slabs will be from an inch to two inches in thickness.

The lintels are made of a metallic central part, about and upon which suitable cement material (for instance, the well-known King's Windsor cement or other equivalent material) is molded, preferably under considerable pressure. The location of the metallic part relative to the cement is shown in Figs. 2 and 3, although any suitable deviation from that which is there shown may be employed. The metal parts detached are shown in Fig. 7. They embody a vertical web *a*, which is rolled over at the top, as at *b*, inclosing a stiff rod *c*. There are also two side pieces composed of a vertical member *d*, a horizontal member *e*, and a roll at the outer extremity *f*, inclosing stiff rods *g*.

The vertical members *d d*, it will be noted, are riveted or bolted together, as by rivets *h*, so that the whole structure is rigid and firm, and the central part, where buckling would be apt to take place, is strengthened not only by the horizontal webs *e e*, but also by making the vertical part at the center of triple thickness. The embedment of the cement about this structure, in addition to the heavy stiffening-rods at each of the curled-over terminals, makes a peculiarly stiff and rigid truss-like beam for the lintel, and when the cement is properly compacted and hardened about it I have found that it is an exceedingly rigid structure as a whole, so much so that I effect a very considerable saving in the cost of buildings made under my system, because whereas the floor-beams A have heretofore usually been spaced from three to four feet apart (seldom more than four and a half feet) it has been estimated that by the employment of my lintels a remarkably stiff construction results, even when the floor-beams are separated by a distance as great as six or six and a half feet.

The lintels are spaced on the floor-beams A from a foot to a foot and a half between



centers, sometimes more, and the space between them is filled by floor-blocks G. (See Figs. 5 and 6.) These are made deeper than such blocks have heretofore been constructed and of sufficient width to stretch entirely across from lintel to lintel. Their depth is equal to the total depth of the lintels, so that their upper surfaces form part of the floor-surface and their lower surfaces part of the ceiling. They are provided with outwardly flaring or inclined parts H H' and vertical walls with flat bottom surfaces I. The walls may be otherwise shaped to conform to the sides of the lintels, and the blocks are perforated by an opening J made through them. If the lintels are separated by a distance as great as a foot and a half or more, as illustrated in Fig. 3, then I prefer to make two openings through them.

At the base of the inclines H H', I prefer to form shoulders K, which rest upon corresponding shoulders L, made in the lintels. The blocks which immediately adjoin the floor-beams A are shaped at their ends as shown at the left in Fig. 6—that is to say, in all respects they coincide with the ends of the lintels. They have a depressed upper part C', an undercut part D', and the projecting lip E', so they may fill all the space between the flanges and web of the floor-beams, and also that the projecting lip or ledge E' may serve to hold the beam-protecting blocks or slabs F in the same manner that the lip E of the lintel does. The blocks may be of such length as preferred. In order that they may be conveniently handled, I seldom have them greater than one foot in length irrespective of what their width may be. The lintels may be set between the floor-beams by the use of cement or equivalent material at the end joints, and also the floor-blocks may be laid in between the lintels by the employment of similar cementitious material, or they may be set or laid without any such material, because the cement of the flooring and the plaster or cement of the ceiling will serve every purpose of binding the whole together into a rigid and immovable structure.

When the floor is laid as suggested, a coating of cement M (it may be Portland cement or equivalent) is laid to the desired thickness, covering the upper ends of the floor-blocks, the lintels, and the main beams A, and it will be particularly noted that they are all upon a level at their upper surface, so that this work can be easily, expeditiously, and accurately done. On top of the cement the wood flooring, if it be used, or tile, stone, or cement floor N (see Fig. 1) may be laid. The ceiling O will be in like manner applied to the under surface of the flooring. It may be brown mortar and covered with white finish or in any other desired manner.

My invention embodies several very important improvements as compared with any construction heretofore known to me. Although there is a trifle more material em-

ployed in it than in some previous constructions, nevertheless the labor required is so greatly reduced and the security, strength, and fireproof qualities of the flooring so marked that the system is regarded as a decidedly advantageous one. I call particular attention to the following facts:

First. The lintels and the floor-blocks extend to the upper and lower surfaces of the floor and are continuous in area, so that no wiring, lathing, arching, or any other of the expensive and unsightly methods heretofore practiced are necessary.

Second. The number of joints is greatly reduced. There are no small pieces which require accurate union, usually with cement or equivalent material, to effect the desired strength.

Third. The lintels and floor-blocks being made deeper than the construction-beams A and provided with the lips E and E', respectively, the floor-beams are protected on their under surface by the fire-resisting slab or block F, and this is a peculiarly vulnerable point, because in the event of a heavy fire experience has shown that the floor-beams becoming heated on their lower webs will readily buckle, permitting the floor to drop.

Fourth. The surface of the floor above and the ceiling below being continuous, there is less labor and greater security and evenness in laying the floor and ceiling. It is possible to make a better job with less labor than heretofore.

Fifth. The employment of the peculiarly-constructed iron work or truss embedded in the lintels makes them superior to any similar construction known to me.

It will be obvious to those who are familiar with this art that modifications may be made in the details of construction and method of assembling the parts, some of which, indeed, have heretofore been referred to, without departing from the essential features of the invention. I therefore do not limit myself to such details.

I claim—

1. A lintel for fireproof building construction embodying a metallic part having a metallic web and two horizontal webs fastened together, the whole incased in cement-like material, the upper edge of the lintel being on a line with the floor and its under edge on a line with the ceiling and having shoulders on its sides for the support of the filling-blocks.

2. A lintel for fireproof building construction embodying a metallic truss incased in cement-like material, the truss embodying a vertical web having a metallic rod incorporated in it, and two horizontal webs attached to the sides of the vertical web, whereby the metal at about the central portion of the vertical web is made of triple thickness, each of the horizontal webs having a metallic rod incorporated in it.

3. In fireproof building construction the



combination of lintels extending from floor-beam to floor-beam, having shoulders at their upper edges, and blocks of fireproof material of the same depth as the lintels, having surfaces at their upper ends adapted to rest upon said shoulders, whereby the upper surface of the blocks and lintels and floor-beams will all be on the line of the floor-surface, and the under edges of the lintels and blocks on the line with the ceiling.

4. In fireproof building construction the combination of lintels projecting from floor-beam to floor-beam, their lower edges having projecting ledges or parts, fireproof blocks held against the under edges of the floor-beams by said projecting parts of the lintels, blocks made of fireproof material adapted to fill the space from lintel to lintel and be supported by them, the blocks which are next to the floor-beams having one end shaped to engage with the main floor-beams and fill the space between their flanges, and having also a projecting ledge or tongue adapted to hold the said blocks or slabs against the under edge of the floor-beams.

5. In fireproof building construction, in combination with the main floor-beams, lintels spanning the space between them, and

one-piece blocks adapted to be supported on the lintels and to fill the entire space from one to the other, said blocks having the same depth as the lintels so that their upper surfaces form the floor-line and their lower surfaces the ceiling-line.

6. In fireproof building construction the combination with the main floor-beams of lintels embodying a metallic truss incased in cement-like material, and blocks made of fireproof material supported on the lintels and extending from top to bottom thereof so that the upper surfaces of the blocks and lintels are on a line with the floor, and their under surfaces on a line with the ceiling.

7. The combination, in fireproof building construction, of lintels connecting the main floor-beams, and fireproof blocks supported upon the lintels, each extending from lintel to lintel and from its upper to its lower edge or side.

Signed at New Brighton, in the county of Richmond and State of New York, this 4th day of May, 1901.

GEORGE R. KING.

Witnesses:

JOHN COSTELLO,  
THOMAS MCCORMACK.