

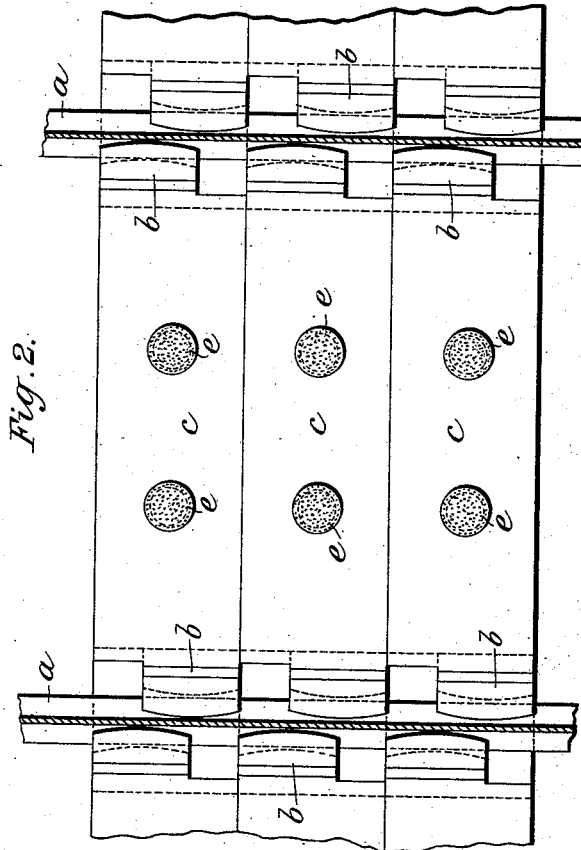
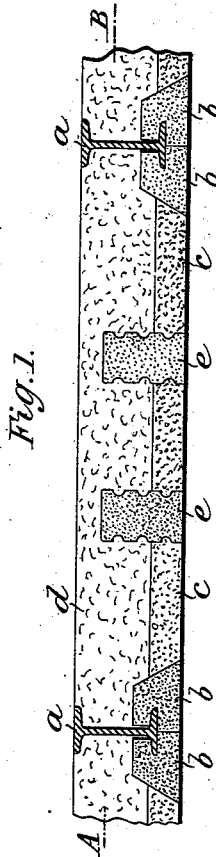
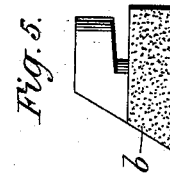
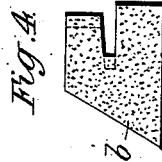
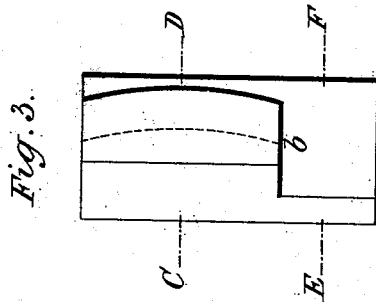
(No Model.)

2 Sheets—Sheet 1.

H. B. PRICE.  
FIREPROOF FLOOR.

No. 524,284.

Patented Aug. 7, 1894.



Witnesses.  
Albert Jones.  
John F. Gairnis.

Inventor.  
Harry Baly Price  
By his Attorneys.  
Whitely & MacKenzie

(No Model.)

2 Sheets—Sheet 2.

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Fig. 11.

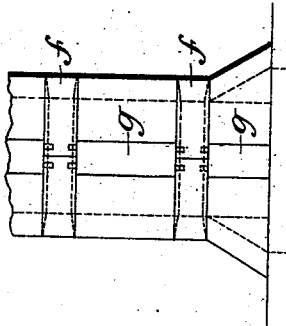
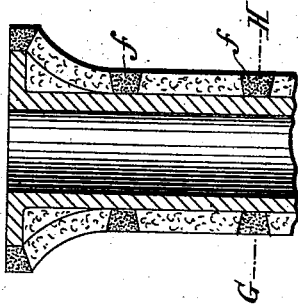


Fig. 12.

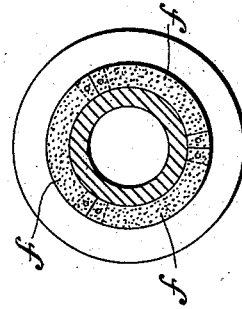


Fig. 7.

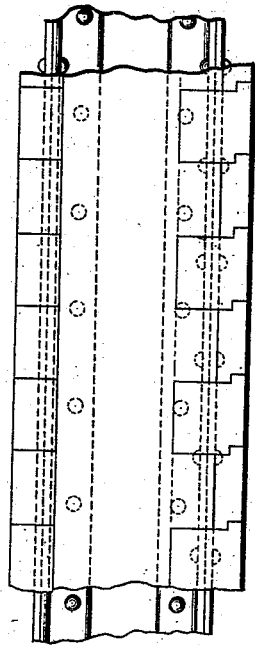


Fig. 9.



Fig. 10.



Fig. 6.

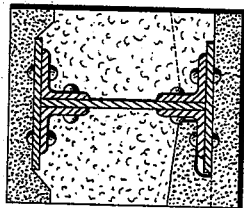
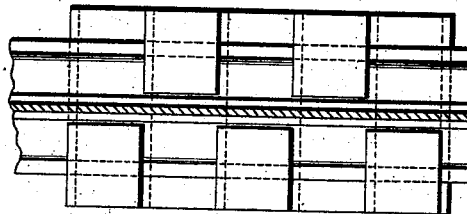


Fig. 8.



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# UNITED STATES PATENT OFFICE.

HARRY BALY PRICE, OF LONDON, ASSIGNOR TO CHARLES WHITFIELD, OF KETTERING, ENGLAND.

## FIREPROOF FLOOR.

SPECIFICATION forming part of Letters Patent No. 524,284, dated August 7, 1894.

Application filed April 11, 1893. Serial No. 469,971. (No model.) Patented in England May 24, 1892, No. 9,857.

*To all whom it may concern:*

Be it known that I, HARRY BALY PRICE, a subject of the Queen of Great Britain and Ireland, residing at Chiswell House, 135 Finsbury Pavement, London, England, have invented certain new and useful Improvements in Fireproof-Floors and other Structures, (for which a patent has been granted in Great Britain, No. 9,857, dated May 24, 1892;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in fire proof floors, and other structures, and its novelty will be fully understood from the following description and claims.

Fire proof floors I construct with iron joists and on the lower flange of the joist I place fire lumps which are molded to a peculiar form so that two of the lumps brought up to the joist from opposite sides embrace the lower flange and part of the web of the joist, and meet together beneath the joist and about the center line. The outer sides of these fire lumps are inclined so that the clear space between the joists, after the fire lumps have been applied, is wider above than it is below. These spaces are filled by molded blocks of concrete which are similarly inclined at their ends. I cause the fire lumps and the concrete block to key together. In each concrete block I fix one or more molded fire brick plugs preferably cylindrical with deeply recessed ring grooves around its periphery, the whole forming a skeleton framework for the reception of filling material. Then I fill in with concrete to cover the whole area over the joists and the molded concrete blocks between them. These firebrick plugs key together the molded blocks and the unmolded concrete filling, the result being a continuous solid structure.

To protect girders from the action of fire I employ molded fire lumps fitted to the bottom flange of the girder. Each lump extends from side to side beneath the flange of the girder and is provided with a jaw which on one side overlaps and embraces the upper face of the flange and reaches nearly to the web. These fire lumps are applied to the girder alter-

nately from opposite sides. The upper flange of the girder is protected by other fire lumps of inverted trough like form which cover the upper flange, the whole forming a skeleton framework the spaces of which are filled in with loose concrete applied to the girder by the aid of a roughly formed mold so as to fill in the spaces between the fire lumps at the top and bottom; thus the girder becomes embedded in a casing of rectangular section formed partly of the fire lump skeleton framework and partly of the concrete filled in between them.

Iron columns I clothe with rings of molded firebrick each ring being in three parts. The rings I keep separate the one from the other by upright distance pieces the ends of which abut upon the rings at the joints and at the end of each upright are two dowels connecting it with the ring sections upon which it is in contact, thus forming a skeleton framework around the surface of the column, the spaces between which are filled in with loose concrete so that the whole forms a continuous cylindrical casing inclosing the iron column.

In order that my invention may be fully understood and readily carried into effect I will proceed to describe the drawings hereunto annexed.

Figure 1 a vertical section of a fire proof floor in accordance with my invention. Fig. 2 is a horizontal section on the line A. B. in Fig. 1.

*a a* are iron joists which support the floor.

*b b* are the fire bricks or lumps which incase the lower flange of the joist.

*c c* are concrete slabs extending from joist to joist across the interval between the fire blocks.

*d d* represents concrete which is filled in loose over the slabs *c c*.

*e e* are fire brick plugs set in the slab *c* and serving to key to it the loose concrete *d*.

Fig. 3 shows to a larger scale, a plan of one of the bricks *b*. Fig. 4 is a section of the same on the line C—D in Fig. 3, and Fig. 5 is a section on the line E—F in the same figure.

I make the concrete slabs *c* by the aid of a mold which receives one of the lumps *b* at each end and a plug or plugs *e* at an inter-

mediate place or places. I cause the concrete to be rammed in the mold and I leave it until it is hard. The concrete will be found to adhere firmly to the fire lumps.

5 In laying the floor the slabs can be lowered from above and slewed into their places, the form of the fire lumps *b* at the ends of the slabs being such as to admit of this; it also allows the upper concrete *d* to rest directly  
10 on the flanges of the joists. Where there is not space to slew the slab I mold it without the fire lumps at the end, I then first place the lumps *b* upon the joists and afterward drop in the concrete slab making good with  
15 cement the joint fire lump. The fireproof floor is easily laid, thoroughly protects the joists and the parts are secure from displacement.

Fig. 6 is a transverse section of a girder  
20 protected by means of fire blocks and concrete in accordance with my invention. Fig. 7 shows a side elevation, and Fig. 8 is a sectional plan of the same.

Fig. 9 is a longitudinal section of one of  
25 the fire blocks which protect the lower flange of the girder, and Fig. 10 is an end elevation of the same.

The fire blocks are molded to fit the flanges of the girder and with grooves or recesses to  
30 receive the rivet heads. The blocks are applied to the lower flange alternately from opposite sides, a rough mold is built around the girder and concrete is filled in, then the blocks at the top are put into their places. Thus  
35 the girder is completely incased in fire proof material which is very firmly attached by the jaws of the lower blocks overlapping the flange of the girder, by the lateral interlocking of these blocks as the drawings show, and  
40 by the overlapping flanges or sides of the upper blocks.

Fig. 11 is a sectional elevation of a column provided with a fire proof protecting casing in accordance with my invention. Fig. 12 is  
45 a horizontal section of the same on the line G H in Fig. 11.

*ff* are curved firelumps which go together to form rings embracing the column. The drawings indicate three lumps in each ring  
50 but this may be varied.

*gg* are other firelumps which keep the rings apart, they are placed under the joints of the rings and they are provided with projections or dowels at their ends which enter corresponding recesses in the lumps *f*. The casing  
55 is applied by the aid of a short cylindrical wooden or sheet metal casing formed around the column; one of the framework rings is laid within the casing and the upright blocks  
60 *g* are erected in their places, then concrete is filled in about the column to the top of the upright blocks and allowed to set. Afterward another ring of fire lumps is laid, the casing is shifted upward on the column and the work  
65 is proceeded with as before. In a column thus protected the framework of the fire lumps serves to secure the concrete to the column and prevent it separating and falling away when exposed to great heat.

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

1. A fire proof floor or other structure comprising slabs as *c*, of fire proof material, a covering of concrete arranged on the slabs, and fire proof plugs connected to the slabs and  
75 adapted to key the concrete covering thereto, substantially as and for the purpose set forth.

2. A fireproof floor, comprising metal joists for supporting the floor, fire lumps incasing the lower flanges of the joists, concrete slabs  
80 extending between the fire lumps, concrete laid on the slabs and filling the space between the joists, and firebrick plugs molded in the slab and keying them to the concrete covering, all substantially as described. 85

3. In a fire proof structure, the combination with girders, joists, or the like having flanges at their lower edges, of fire lumps, each with a jaw at one end, applied oppositely one to the flange of one girder, and another to the  
90 flange of the next girder, the jaws ranging diagonally to each other, and a concrete filling arranged against the sides of the girders, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses. 95

HARRY BALY PRICE.

Witnesses:

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THOMAS LAKE.