

No. 614,328.

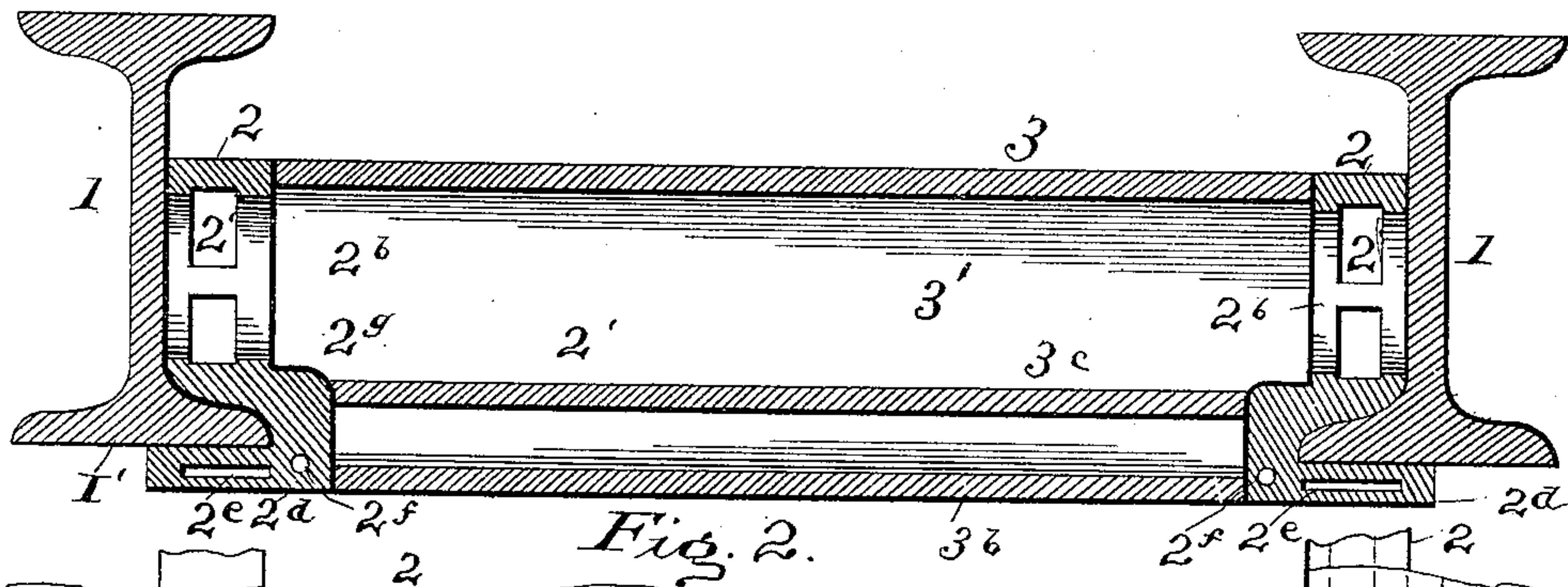
Patented Nov. 15, 1898.

R. W. LYLE.  
FIREPROOFING.

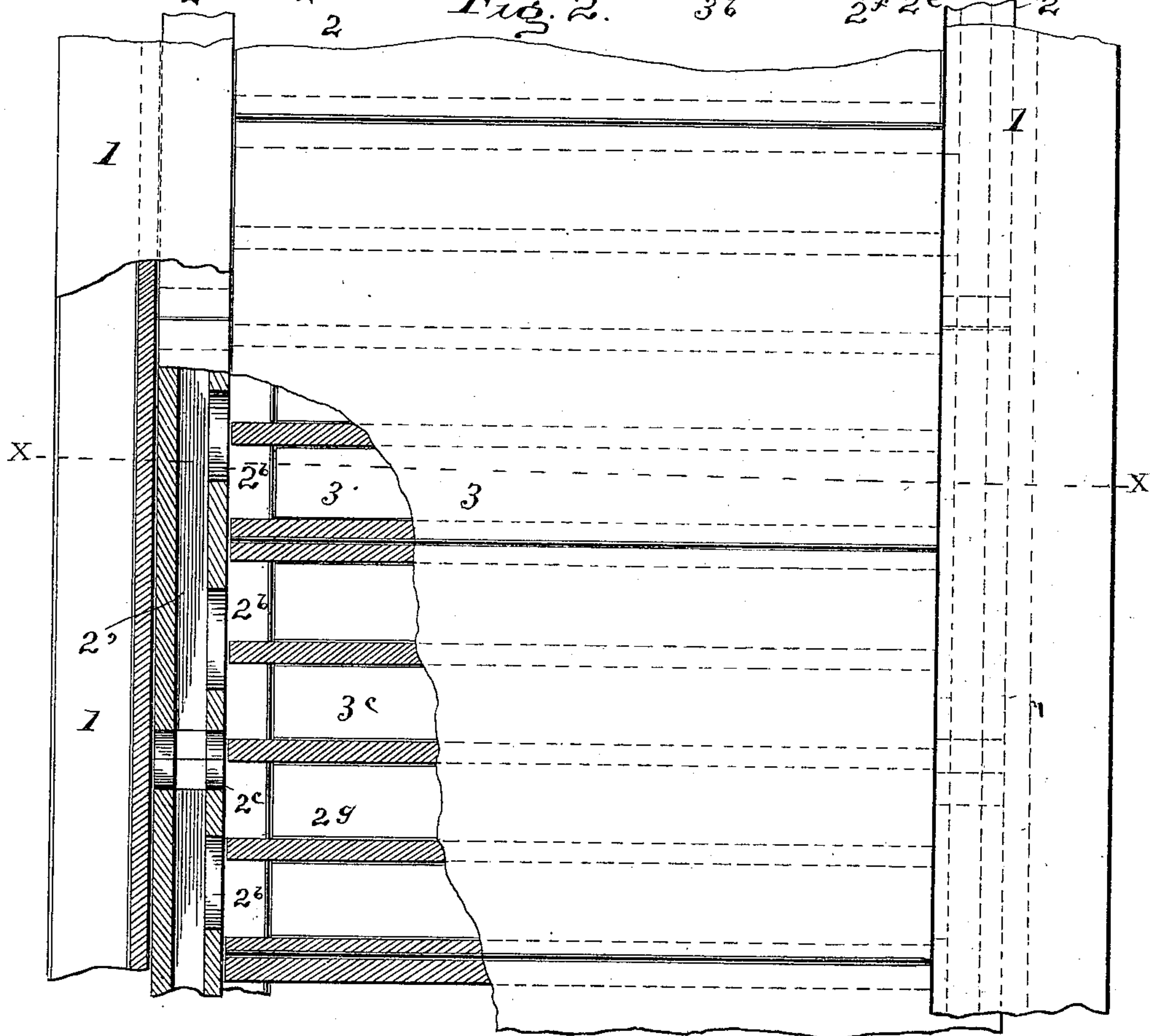
(Application filed Mar. 20, 1897.)

(No Model.)

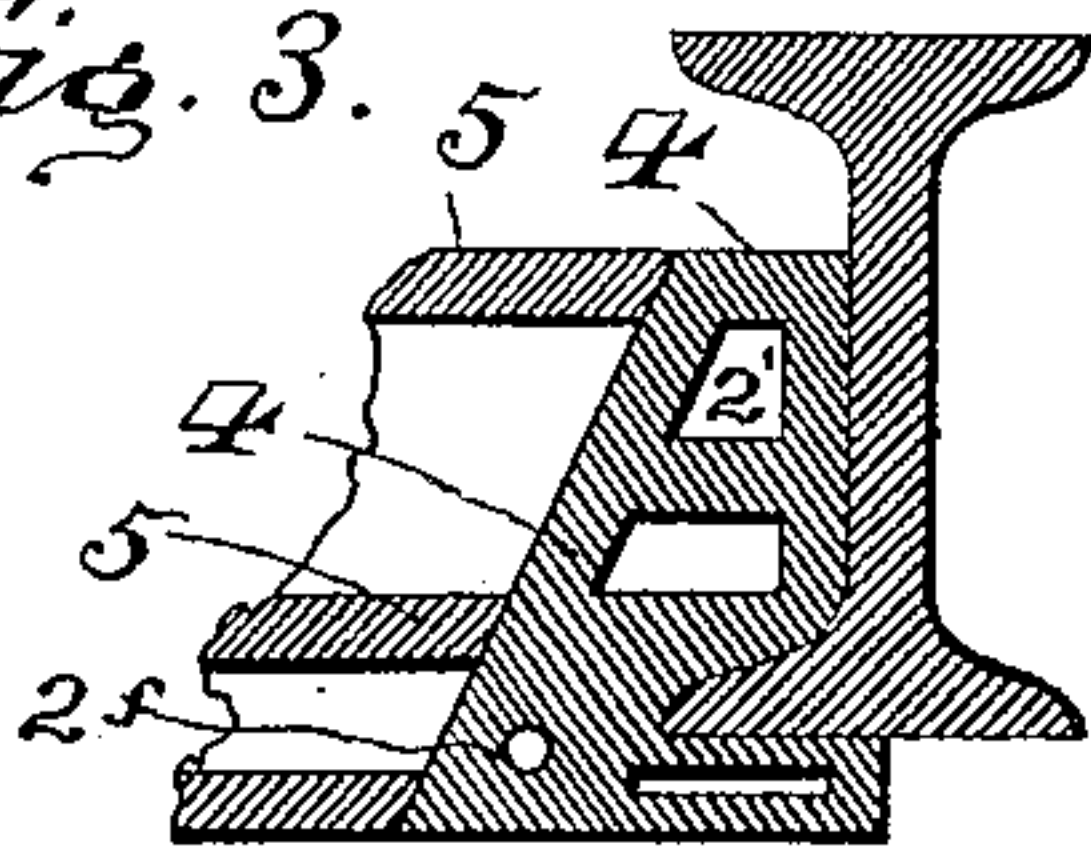
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses  
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# UNITED STATES PATENT OFFICE.

ROBERT W. LYLE, OF WOODBRIDGE, NEW JERSEY.

## FIREPROOFING.

SPECIFICATION forming part of Letters Patent No. 614,328, dated November 15, 1898.

Application filed March 20, 1897. Serial No. 628,516. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT W. LYLE, a citizen of the United States, residing at Woodbridge, in the county of Middlesex and State of New Jersey, have invented a certain new, useful, and valuable Improvement in Fireproofing, of which the following is a full, clear, and exact description.

My present invention relates to fireproofing, and particularly to that class of fireproofing used in forming fireproof floors; and the object of my invention is to provide the combination and arrangement of parts, such as will be hereinafter fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a transverse sectional view of my improved fireproofing, taken on the line *xx* of Fig. 2; and Fig. 2 is a plan view of the same, the lower left-hand portion being broken away in order to show the underlying construction of the several parts. Fig. 3 shows a modified form of skewback.

I am aware that various forms of fireproofing have been patented, but they have all failed to provide for that perfect circulation so essential in effectual fireproofing, whereas my improvement not only meets this indispensable requirement, but it provides a structure of unusual strength and economy of manufacture, the latter advantage resulting from the fact that the several parts comprising my fireproofing are of such shape or form as to render them capable of being pressed out rapidly in continuous lengths through the dies of an ordinary tile-press, owing to the entire absence in all of my parts of lateral shoulders or protrusions. I may render my fireproofing non-ventilating by making the slight changes to be hereinafter described.

Proceeding with a detailed description of my invention, I would first invite attention to the fact that in the accompanying drawings, which form a part of this specification, like numerals of reference indicate the same parts differently shown in the several views.

1 indicates an I-beam in both Figs. 1 and 2, being shown in vertical section in the first and in plan and horizontal section in the latter figure. Likewise 2 indicates my improved skewbacks, having the longitudinal air-ducts 2', which latter, obviously, are continuous

through as many skewbacks as are placed in juxtaposition. Each skewback has two or more openings 2<sup>b</sup>, formed on their inner sides in such position as to lead into or communicate with the transversely-extending openings 3' of the adjacent lintels 3. The upper ends 2<sup>c</sup> of each skewback are cut away, as shown, so as to form additional openings into the hollow lintels, and, further, I prefer to provide the under extension 2<sup>a</sup> with one or more air-ducts 2<sup>e</sup> 2<sup>f</sup>, in order to more perfectly protect the lower portion 1' of the iron I-beam, the importance of doing which is not generally realized, but which becomes apparent when one considers that in all severe fires the ceilings are generally first attacked by the flames, and consequently the under part 1' of the I-beams first become heated, and I have therefore provided means for protecting this vital part. The lintels 3 (shown in Figs. 1 and 2) rest upon the shoulders 2<sup>s</sup> of the skewbacks and may be made in comparatively long lengths, as shown, or in interlocking sections or in arching sections. In the present instance I have left a considerable space between the top of the lintels and the top of the I-beams, which I preferably fill in with concrete.

In the modification shown in Fig. 3 I bevel the edge 4' of the skewback 4, so as to receive the correspondingly-beveled edges 5' 6' of the modified form of skewback 4. Thus any weight upon the lintel 5 tends to act laterally upon the skewbacks 4 and I-beams and forming an arch-like construction and obviating the exertion of a dead-weight upon the I-beams.

Now if one will study the effect of intense heat upon a ceiling formed of my improved fireproofing the hot-air circulation, aside from that which takes place in the air-ducts 2<sup>e</sup> 2<sup>f</sup>, would be substantially as follows: As the lintels offer the greatest area to the flames or heat the superincumbent air would first arise therein, and in expanding, principally transversely, would flow into the longitudinally-extending air-ducts, first, through the openings 2<sup>c</sup> and later through the openings 2<sup>b</sup> into the skewback, thus conducting the air from the lintel or series of lintels which may be subjected to the most fire or heat to those subjected to less fire and containing air



of lower temperature, although the two series of lintels may be a great distance apart, and owing to the peculiar construction and arrangement of my parts the slightest difference of temperature between the air contained in two lintels or skewbacks will create an active circulation of air throughout the entire series.

As above explained, in all severe fires the ceilings are first attacked by the flames, and consequently the undersurface 3<sup>b</sup> of the lintel 3 is suddenly heated, and this sudden heating and expansion frequently causes the lower surface 3<sup>b</sup> of the lintel to crack and fall away, and in order to provide against the heat or flames doing further damage I provide the safety-partition 3<sup>c</sup>, thus forming a double bottom to the lintel. The theory is that the presence of the primary bottom 3<sup>b</sup> prevents the safety-bottom 3<sup>c</sup> from becoming suddenly heated, and thus avoiding the sudden expansion and breakage which would otherwise occur.

By simply making the skewbacks 2 without the side openings 2<sup>b</sup> 2<sup>c</sup> therein my system of fireproofing, as above described, is rendered non-ventilating, thus meeting the requirements of some architects who do not favor ventilating fireproofing.

I claim—

1. In a fireproof-floor construction, the combination with the I-beams, of the skewbacks supported by said beams said skewbacks having longitudinal ventilating-channels in the upper portion thereof with lateral openings entering said channels, and air-ducts in

the lower part, and hollow lintels arranged between and supported by the skewbacks, each of said lintels having a double bottom to provide two longitudinal air-channels between the skewbacks, the lower of said channels being entirely closed by the ends of the lintels abutting against the sides of the skewbacks, and the upper channel being open and in communication with the ventilating-channels in the skewbacks.

2. In a fireproof-floor construction, the combination with the I-beams, of the skewbacks supported by the said beams and each having an enlarged lower portion with ventilating-openings 2<sup>e</sup>, 2<sup>f</sup>, and a hollow contracted upper portion forming longitudinal ventilating-channels and having lateral openings, a shoulder 2<sup>g</sup>, projecting outward from each skewback at the base of the contracted portion, and hollow lintels arranged between and supported by the skewbacks, each of said lintels having a double bottom to provide two longitudinal air-channels between the skewbacks, the two bottom walls of said lintels lying wholly within and abutting against the side walls of the enlarged lower portion of the skewbacks to form a closed lower channel—and the upper channel opening into the channels in the skewbacks, substantially as described.

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

ROBERT W. LYLE.

Witnesses:

F. H. WIGGINS,  
L. D. SMITH.