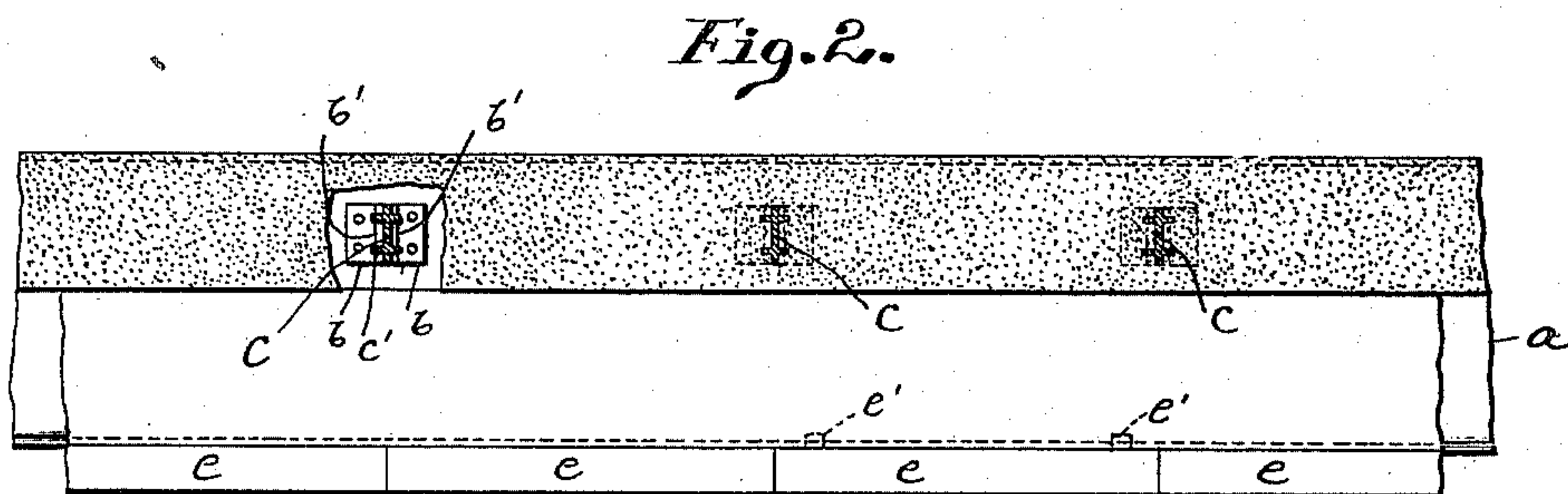
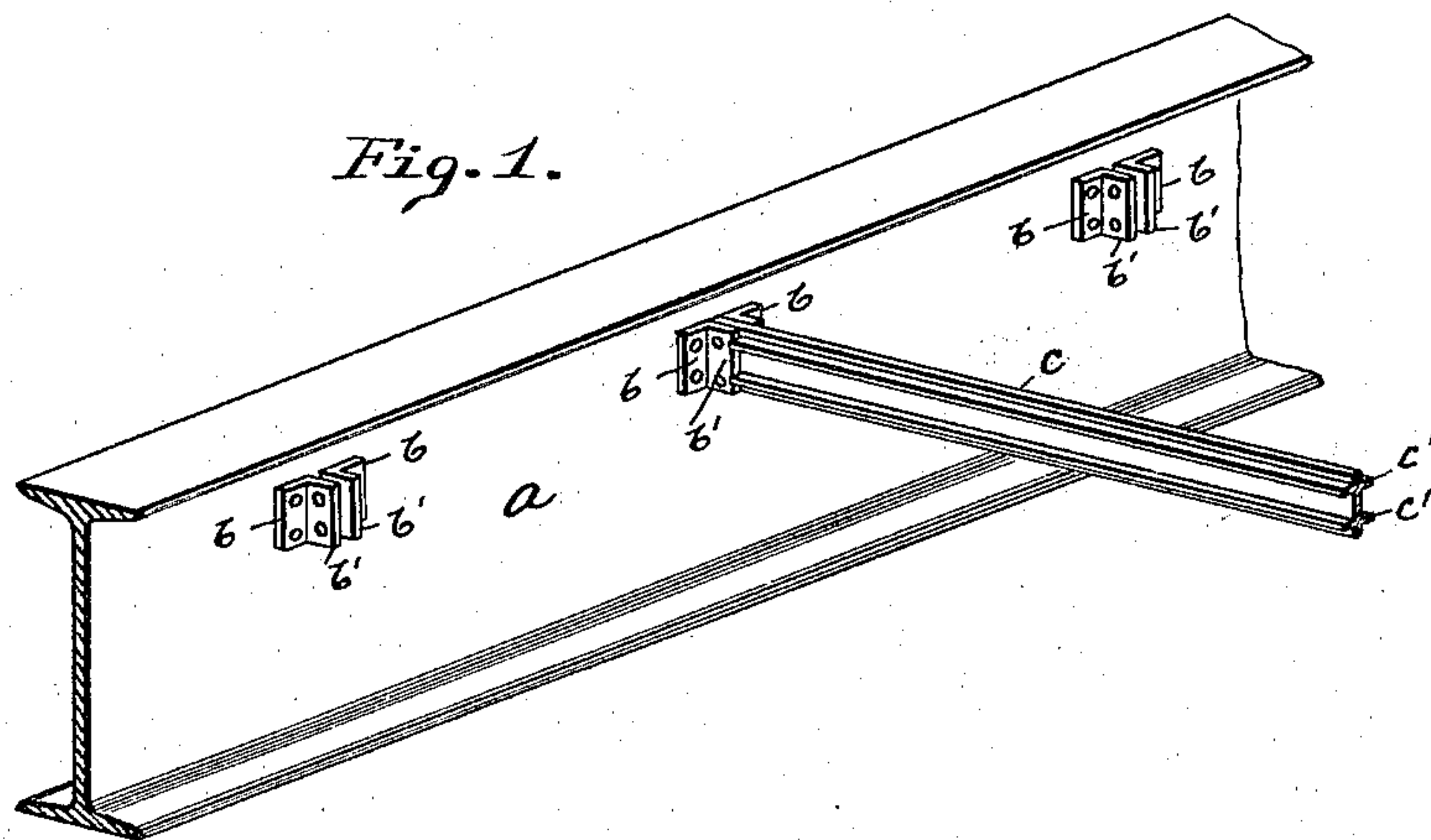


(No Model.)

C. A. BALPH & E. P. S. WRIGHT.  
FIREPROOF FLOOR AND CEILING.

No. 598,691.

Patented Feb. 8, 1898.



*Witnesses:*

*Watson Farnsworth*  
*Robert C. Totten*

*Inventors:*

*Charles A. Balph &*  
*Elisha P. S. Wright*  
*By Kay & Hatten*  
*Attorneys*



# UNITED STATES PATENT OFFICE.

CHARLES A. BALPH, OF PITTSBURG, PENNSYLVANIA, AND ELISHA P. S. WRIGHT, OF NEW YORK, N. Y.

## FIREPROOF FLOOR AND CEILING.

SPECIFICATION forming part of Letters Patent No. 598,691, dated February 8, 1898.

Application filed August 12, 1896. Serial No. 602,477. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES A. BALPH, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, and ELISHA P. S. WRIGHT, a resident of New York, county and State of New York, have invented a new and useful Improvement in Fireproof Floors and Ceilings; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to the construction of fireproof floors and ceilings, and more particularly to a certain form of such floors and ceilings as is set forth in Letters Patent of the United States No. 527,042, granted to us on the 9th day of October, 1894. In that patent there are metal bars of a length corresponding to the space between the beams and extending transversely of and connected to the beams, said bars being supported on their edges, and a filling of concrete completely embedding said bars. The present invention relates to a novel means of connecting said bars to said beams, so that said bars will be supported on their edges.

The invention comprises, generally stated, ribbed or roughened bars of lengths corresponding substantially to the distance between the beams set on their edges and secured between the outwardly-extending flanges of angle-irons arranged in pairs and secured to the webs of the beams and concrete, completely embedding said bars.

In the accompanying drawings, Figure 1 is a perspective view of a portion of a beam with bars connected thereto in the manner of the invention. Fig. 2 is a like view showing the concrete partly broken away to show the support of the bar.

Like letters indicate like parts in each of the figures.

The letter *a* designates a suitable metal I-beam, such as are employed in fireproof structures. Riveted or otherwise secured to the web of the beam *a* are the angle-irons *b* with the outwardly-projecting flange *b'*. The bars *c* extend transversely of the beams and have,

preferably, the ribs *c'* formed along the sides thereof. These ribs tend to hold or bind the concrete when packed around said bars. To add to the rigidity of the construction, the bars *c* are supported on their edges. Accordingly the ends of said bars have the ribs cut therefrom, so as to present a flat face when brought into contact with the flange *b'* of the angle-iron. The bar is then riveted to the flanges *b'* of the angle-irons, and is thus supported firmly on its edge between said flanges to give the required rigidity. These bars may be placed at suitable intervals, and while we have only illustrated the floor-bars it is apparent that ceiling-bars may be supported in the same manner.

With the bars supported in the manner set forth the concrete can be packed around the same, so as to completely embed them, a suitable centering having been erected.

The bottom flange of the beam *a* has the tiles *e* attached thereto, said tiles having the pliable clips *e'* projecting therefrom and engaging said flange. This tile is set forth and claimed in an application filed by us on the 21st day of January, 1896, Serial No. 576,290. Concrete *f* may then be used to cover the remainder of the beam.

What we claim as our invention, and desire to secure by Letters Patent, is—

In fireproof floors and ceilings, the combination with the I-beams, of angle-irons arranged in pairs and secured to the webs of said beams, cross-bars secured between the outwardly-extending flanges of each pair of said angle-irons, said bars being supported on their edges, and concrete completely embedding said bars, substantially as set forth.

In testimony whereof we, the said CHARLES A. BALPH and ELISHA P. S. WRIGHT, have hereunto set our hands.

CHARLES A. BALPH.  
ELISHA P. S. WRIGHT.

Witnesses:

ROBT. D. TOTTEN,  
ROBERT C. TOTTEN.