

No. 676,802.

Patented June 18, 1901.

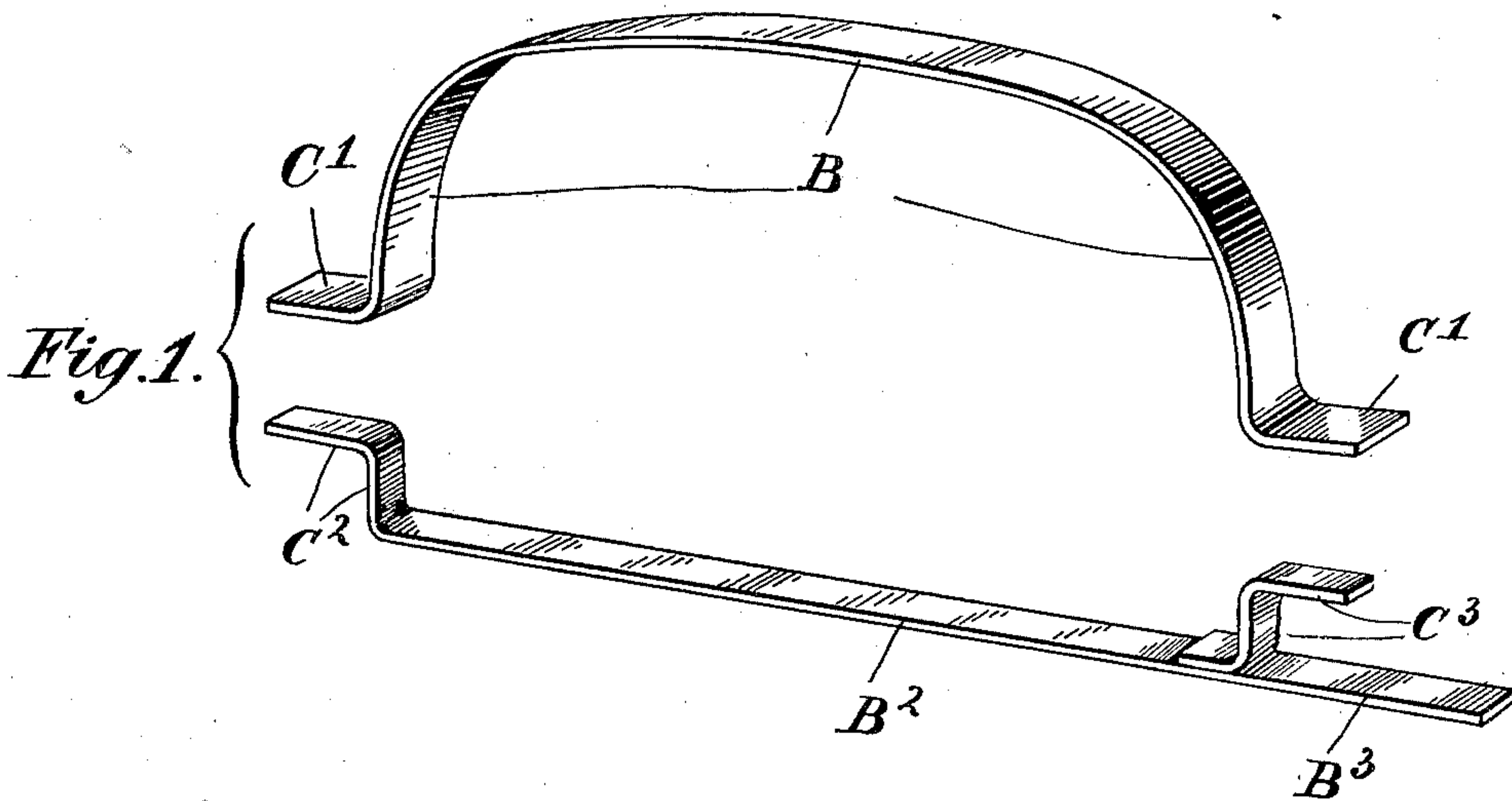
W. SEEFELS.

METHOD OF AND MEANS FOR CONSTRUCTING FIRE RESISTING AND VENTILATING  
FLOORS AND CEILINGS.

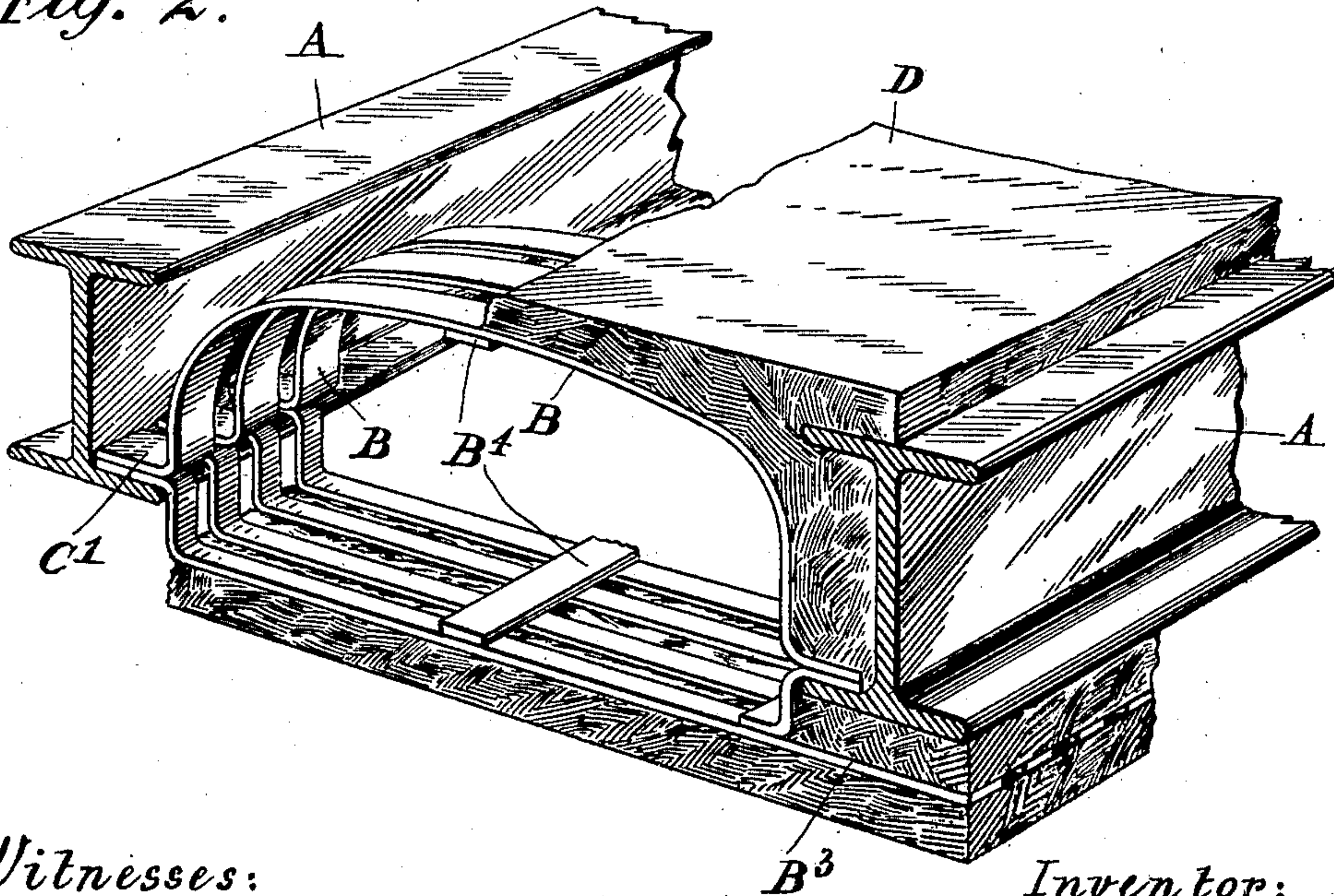
(No Model.)

(Application filed June 25, 1900.)

2 Sheets—Sheet 1.



*Fig. 2.*



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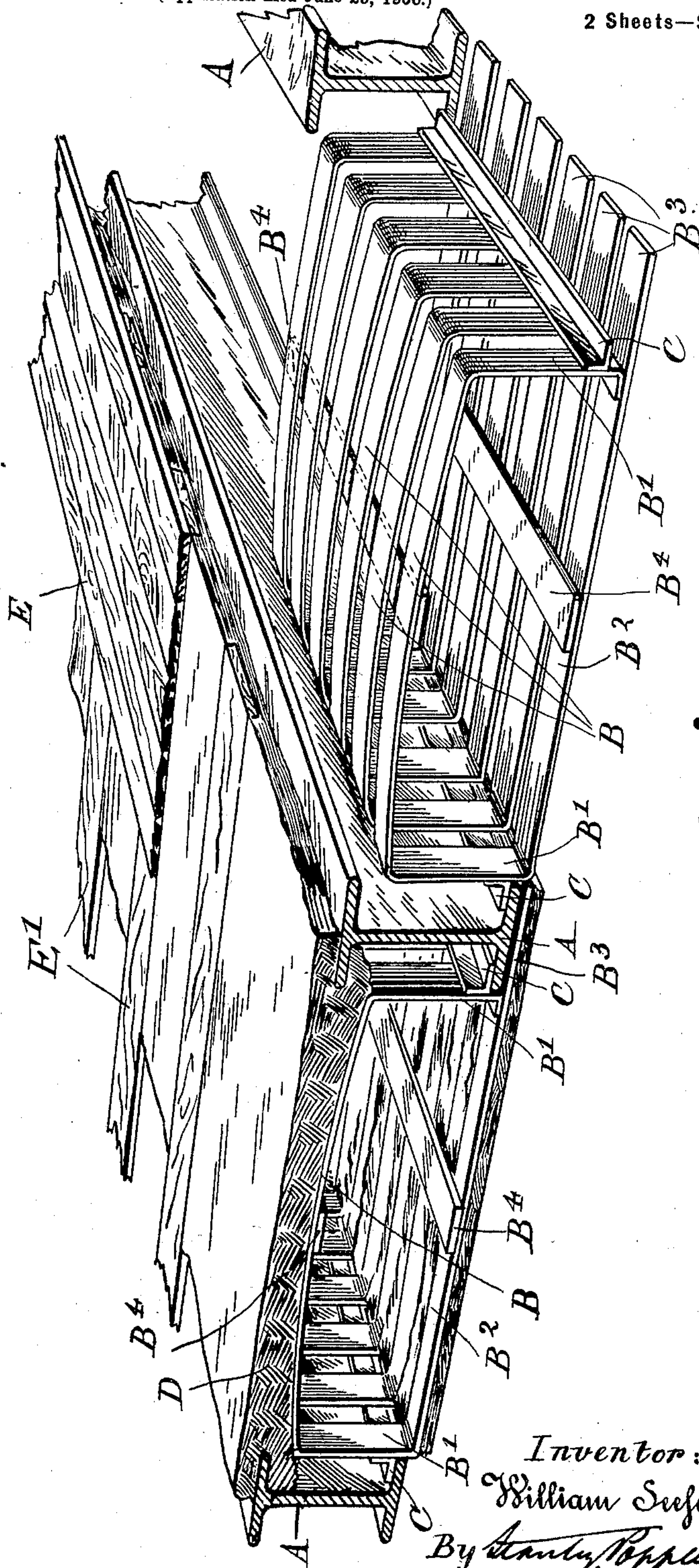


Fig. 3.

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# UNITED STATES PATENT OFFICE.

WILLIAM SEEFELS, OF LONDON, ENGLAND.

METHOD OF AND MEANS FOR CONSTRUCTING FIRE-RESISTING AND VENTILATING FLOORS AND CEILINGS.

SPECIFICATION forming part of Letters Patent No. 676,802, dated June 18, 1901.

Application filed June 25, 1900. Serial No. 21,510. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM SEEFELS, a subject of the German Emperor, residing at 11 Tabernaclestreet, Finsbury, London, E. C., England, have invented certain new and useful Improvements in Methods of and Means for Constructing Fire-Resisting and Ventilating Floors and Ceilings, of which the following is a specification.

My invention relates to the construction of fire-resisting and ventilating floors and ceilings, its object being to enable the same to be made much more cheaply than heretofore, and yet be more durable and efficient for their purpose and simpler in construction.

In carrying out my invention I prepare a number of hollow or skeleton bodies or cages composed of metal lathing, preferably hoop-iron, shaped according to the nature of the structure of which they are intended to form an essential part. Such bodies or cages placed together in position form a backing or framework, upon or around which cement, plaster, or other composition is applied and adheres when set. Before the application of said composition, however, or in any case before the final coating of same has been applied, the bodies or cages aforesaid are laid or fixed in the positions they are intended to occupy between girders or joists.

Where hoop-iron or the like is employed as the material for making the hollow body or cage aforesaid, it may be first cut into convenient lengths and the strips so formed fastened in parallel position to a common cross-strip, retaining the members of the series a short distance apart in the form of ribs. More than one of such cross-strips may be used if extra rigidity is required. About half a dozen (or more) of these ribs may be taken to compose one body, and they may be of such a length as to be capable of being bent together in the form of an inclosed hollow body or cage, open at the two ends, and having top, bottom, and two sides held together by the necessary cross-strips. Each rib may, however, be bent into its required form independently, if preferred, and then fastened to the common cross strip or strips. Also the hollow bodies or cages may, for greater convenience, be constructed in two parts, an upper and a lower part, somewhat

like a dish and its cover, as hereinafter explained.

Reference will herein be made to the accompanying drawings, whereon—

Figure 1 shows two essential details of one form of my invention for applying to the construction of a ceiling and floor. Fig. 2 is a perspective view of a section of a ceiling and floor constructed according to this form of my invention. Fig. 3 shows a slight modification in form and method of carrying out my invention as above named.

Referring to Figs. 1 and 2, I may take a number of strips or ribs B, of hoop or band iron or the like, and bend them into the form of an arch having horizontal feet C', the whole being of such a length as to span across the distance between two parallel girders or joists of the floor of the building. Said ribs are fastened together in parallel rows by means of a transverse strip B<sup>4</sup>. I also take a number of straight strips or ribs B<sup>2</sup> and bend up one end into the form of an inverted foot C<sup>2</sup> and attach a similarly-shaped piece C<sup>3</sup> at or near the other end, the inverted feet C<sup>2</sup> C<sup>3</sup> being adapted to bear the weight of the feet C' when in position. The ribs B<sup>2</sup> are also held together in parallel position by a transverse strip B<sup>4</sup>, and each rib is continued beyond the attached foot C<sup>3</sup> for a short distance, as at B<sup>3</sup>. I prefer that the ribs B, which are to form the foundation of the floor, should be three-fourths of an inch wide and be separated by a space of three-eighths of an inch and that the ribs B<sup>2</sup>, which constitute the foundation or support for the ceiling, should be three-eighths of an inch wide, and the gaps likewise three-eighths of an inch; but I do not wish to limit myself to these measurements and proportions. In applying my invention in this form the straight set of ribs B<sup>2</sup> is first of all laid in position between the girders A by first laying the parts C<sup>3</sup> upon the lower flange of said girder and then lowering the other end until the foot C<sup>2</sup> hangs upon the lower flange of the opposite girder. The series of flat ribs B<sup>2</sup> will now lie about one inch below the level of the girders, (the height of the feet being arranged to allow of this,) and the continuation B<sup>3</sup> extends only underneath the width of the girder-flange and no farther. In this manner a large number of ribs are continued to be laid until



the area between the girders is completely filled by them, and the curved sets of ribs B are simply laid in position feet to feet above the lower ones, the arch being upward. Concrete D or other suitable flooring composition is now laid on the upper ribs and around the sides of the girders, first in a very coarse form, composed largely of small stones screened to three-eighths of an inch, and, lastly, a finer-grained cement or concrete is added, completely covering the top flanges of the girders A. The ceiling consists of the concrete, plaster, or like composition, and it will be noted that about an inch of some substance lies between the bottom flange and the rib portions B<sup>3</sup>, a further thickness of an inch or thereabout forming the ceiling proper. In the end a very efficient protective covering is built up around the girders A, affording very substantial security against heat or fire. A thorough means of ventilation is provided between floor and ceiling, the same space being also capable of being used as flues or for containing pipes, wires, or the like for any purpose.

The ribbed work may be covered with a preliminary layer of cement or other composition, which may become hardened before being introduced into position between the girders, which may effect a saving of time in the drying of the floor.

As shown by Fig. 3, the hollow or skeleton bodies or cages before mentioned, which are adapted to lie suspended between the girders or joists A of the building, are made up of longer strips or ribs, proportioned and shaped in cross-section in the form of a slight arch B, carried by two short uprights B' B' upon a straight piece B<sup>2</sup>, the laths being separated from each other by a distance equal to about half their width. They are placed end to end within the spaces between the parallel girders or joists, suitable projecting strips C C being provided by which they may be supported upon the bottom flanges thereof.

The under frame B<sup>2</sup> B<sup>2</sup> is made to come very slightly lower than the bottom of the girders, extending underneath the same upon one side, as at B<sup>3</sup> B<sup>3</sup> B<sup>3</sup>, so as to reach the next row, and thus present an unbroken surface of lathing for the plastering of the ceiling, as in the first form. Transverse metal strips B<sup>4</sup> B<sup>4</sup> may be fixed likewise centrally within the hollow frame. Concrete D or other suitable flooring and also ceiling composition is applied, as already described. A wood floor E may afterward be added, if it should be desired, boards E' being previously embedded in the concrete for furnishing a surface for nailing.

Having thus fully described my invention, I declare that what I claim, and desire to secure by Letters Patent, is—

1. For fire-resisting and ventilating floors and ceilings a series of arched parallel ribs united to one another by a cross-strip B<sup>4</sup> and having feet C' in combination with a series of straight parallel ribs B<sup>2</sup> united to one another by a cross-strip B<sup>4</sup> and having inverted but correspondingly-situated feet C<sup>2</sup> C<sup>3</sup> said feet C' C<sup>2</sup> C<sup>3</sup> being the means whereby said series of parallel ribs are held or supported upon the girders or joists of the building the whole substantially as described with reference to Figs. 1 and 2.

2. For fire-resisting and ventilating floors and ceilings a hollow or skeleton body or cage adapted to lie between the girders or joists of the building and composed of a series of parallel laths fastened to cross-strips and bent so as to form an inclosed space substantially as described with reference to Fig. 3.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

WILLIAM SEEFELS.

Witnesses:

JACOB STANLEY,  
HARRY T. P. GEE.