

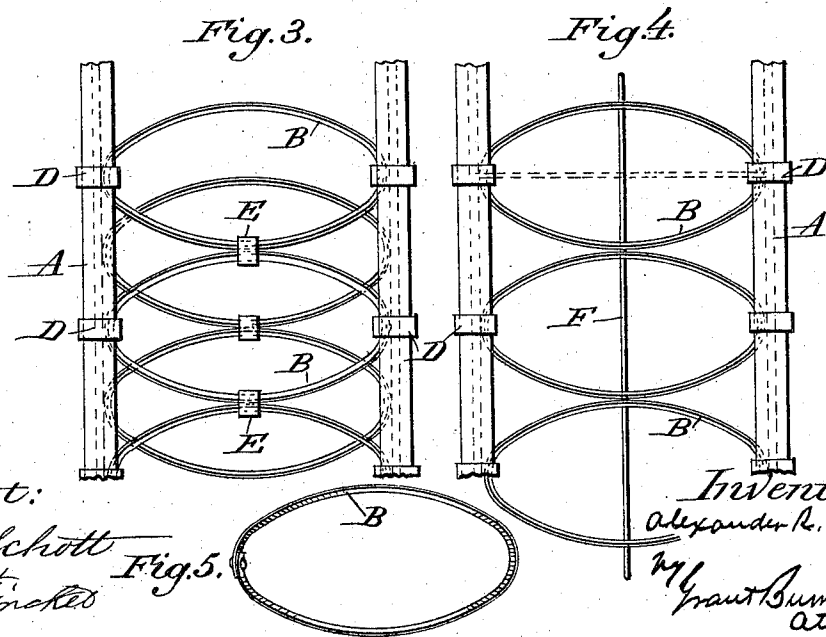
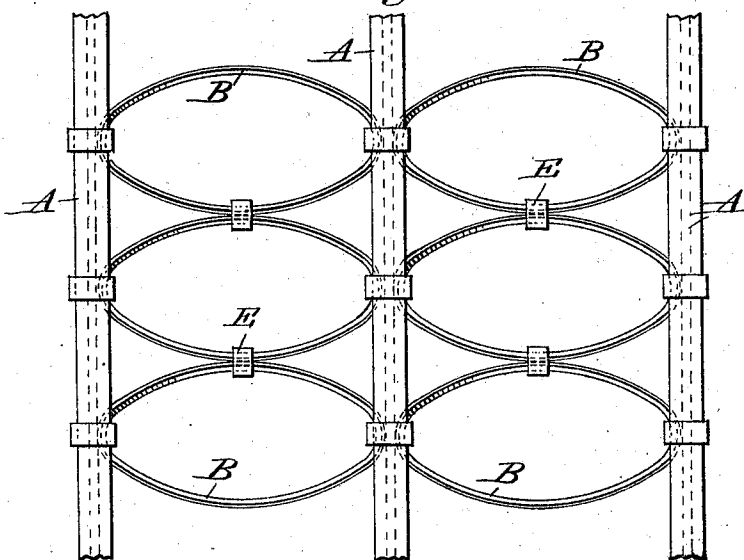
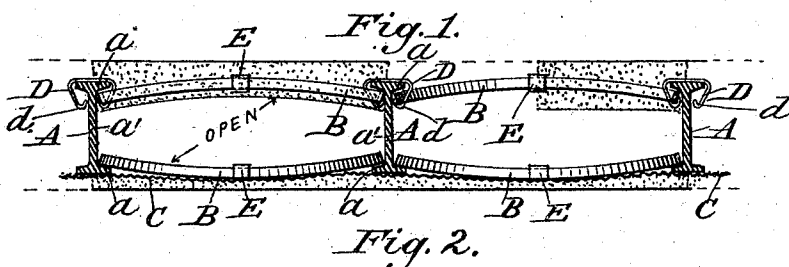
(No Model.)

2 Sheets—Sheet 1.

A. R. FORDYCE.
FIREPROOF CONSTRUCTION.

No. 577,598.

Patented Feb. 23, 1897.



Attest:

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H. D. Finckel

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Alexander R. Fordyce
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att.

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Fig. 6.

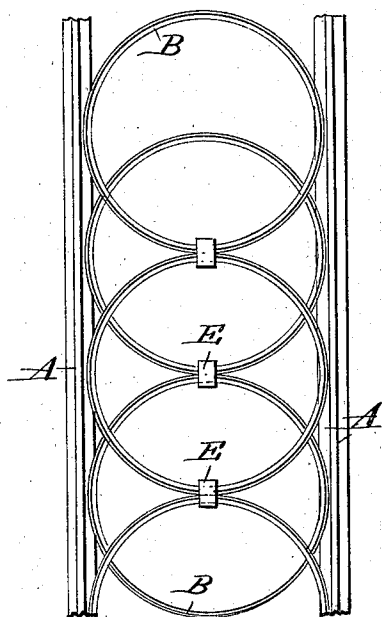


Fig. 8.

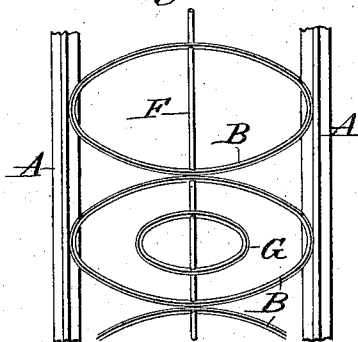


Fig. 9.

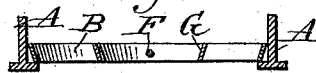


Fig. 10.

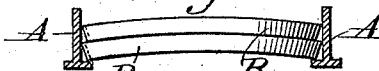


Fig. 11.



Fig. 7.



Fig. 12.

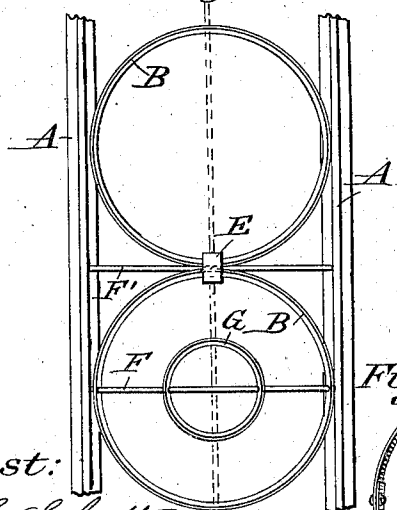


Fig. 14.

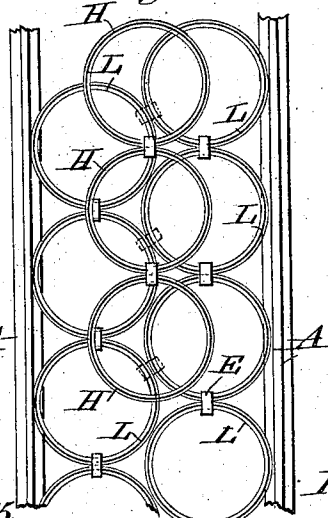
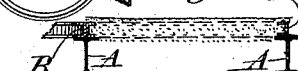


Fig. 16.



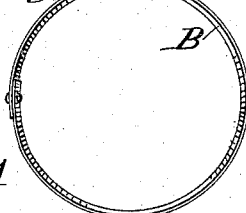
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Fig. 15.



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UNITED STATES PATENT OFFICE.

ALEXANDER R. FORDYCE, OF NEWARK, NEW JERSEY.

FIREPROOF CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 577,598, dated February 23, 1897.

Application filed October 20, 1896. Serial No. 609,453. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER R. FORDYCE, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Fireproof Construction, of which the following is a full, clear, and exact description, such as will enable those skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

The invention relates to improvements in fireproof construction, and more particularly to the formation of the metallic skeleton which forms the foundation of floors, ceilings, partitions, &c., and which supports the filling of plaster or other material which forms the body of the wall.

It has for its object the provision of a skeleton that can be easily built, of cheap construction, and of considerable strength, which is adapted to be used in the construction of walls of any thickness and in the building of combined floors and ceilings of any depth.

The invention consists in the novel construction, combination, and arrangement of parts, such as will be hereinafter fully described, pointed out in the appended claims, and illustrated in the accompanying drawings.

In the accompanying drawings, in which similar letters of reference designate corresponding parts, Figure 1 is a vertical section of a combined floor and ceiling embodying the invention. Fig. 2 is a plan view showing the skeleton formation of the floor. Fig. 3 is a plan view showing the skeleton with the hoops arranged so as to break joint. Fig. 4 is a plan view of a section of the skeleton, showing the hoops provided with an auxiliary support. Fig. 5 is a plan view of one of the hoops. Fig. 6 is a plan view of a section of the skeleton, showing the hoops circular in form instead of elliptical, as shown in the preceding views. Fig. 7 is a sectional view showing the hoops of a circular form arranged so as to break joint and embedded in a filling. Fig. 8 is a plan view of a section of skeleton in which the hoops are elliptical in form and provided with an auxiliary support and have a smaller hoop mounted concentrically within

the main hoop and carried by the auxiliary support. Fig. 9 is a sectional view showing circular hoops of different diameters and the one of the shorter diameter concentrically mounted within the larger hoop. Fig. 10 is a section view showing elliptical hoops mounted so as to break joint. Fig. 11 is a detail view showing cross-sections of strips of different designs of which the hoops may be formed. Fig. 12 is a plan view of a section of skeleton in which the hoops are round and are mounted concentrically and provided with an auxiliary support that extends from beam to beam. Fig. 13 is a sectional view of the same. Fig. 14 is a plan view of a section of skeleton formed of numerous smaller hoops joined together and mounted so as to break joint. Fig. 15 is a plan view of a circular hoop. Fig. 16 is an end view showing a hoop embedded in a filling to form a flagging.

Referring to the drawings by letter, and more particularly to Figs. 1 and 2, which show the skeleton used in the formation of a floor and ceiling construction, A A designate the beams which support the metallic skeleton forming the foundation of the filling composing the body of the floor and ceiling. These beams may be any of the forms well known in the art, and which generally consists of a web having a flange or flanges projecting from its edge or edges. The beam shown in the present instance is commonly called an "I-beam" and is well adapted to the purpose. Between these beams is supported the metallic skeleton, which carries the plaster or other filling. The skeleton consists, primarily, of a number of hoops supported between the beams and suitably connected and guarded against spreading. In the construction shown in the said figures the hoops B B are elliptical in form and are arranged between the supports in a manner hereinafter to be described. In the manufacture of these hoops a strip of metal of a suitable width and preferably plain in cross-section, but for different purposes may be of different shapes, as shown in Fig. 11, is first given a form somewhat similar to a very thin frustum of a cone, as is shown in Figs. 13 and 15. In the preferred form of construction, especially in the formation of floors and ceilings, the hoops are given an elliptical shape. When bent into

an elliptical form, the hoop becomes somewhat dished, which is due to the inclination of the sides to form the frustum of a cone. The hoop thus formed is in the shape of a shallow arch, which greatly increases its strength when placed to utilize this formation, and especially adapts it to be used in the construction of floors intended to bear heavy weights.

The elliptical hoops are so bent that the longest diameter of the same will fit between the webs of two adjacent beams. After the floor-beams A A are in place force is applied to the hoop B, so that its longest diameter will be diminished to such an extent as to allow the hoop to pass the edges *a a* of the flanges of the I-beams A A, if they should be beams of such a character and as shown in cross-section in Fig. 1. When in position and the compressing force removed, owing to the elasticity of the metal the hoop will spring out and fill the space between the webs *a' a'* of the adjacent beams. Where there is room, however, the hoops need not be distorted, but placed lengthwise between the beams and turned until they are in the proper positions.

Where the construction is a combined floor and ceiling, such as shown in Figs. 1 and 2, the hoops supporting the ceiling proper will rest on the lower flanges *a a* of the beams. As these ceiling-hoops have but comparatively little weight to support they are placed so that the crown of the arch, formed by the dish shape, is down and flush or below the under side of the beams A A. To the under side of the beams and ceiling-hoops a metallic fabric or reticulated metallic plate may be secured, such as C, and secured thereto in any suitable manner, and forms a lathing, to which the plastering may be applied.

The floor-hoops are placed so that the crown of the arch of each is uppermost. They are held against the under sides of the upper flanges *a a* of the beams by the hangers D D, which may be of any form suitable in the premises. In the present instance they consist of a strip of metal bent over the beam and having hooks *d d* at its ends, adapted to engage with the hoops on opposite sides of a beam. In making the flooring the entire space between the flooring and ceiling hoops may be filled in or an open space left between them, as shown in Fig. 1. The open construction is formed by placing a mold between the two sets of hoops and removing it after the filling has hardened, in a manner well known in the art.

The hoops are placed between the beams, close together, so that they bear one against the other in the direction of their shortest diameters, so as to prevent them from spreading and thereby becoming displaced. Ordinarily the adjacent sides of the hoops are secured together by clips, such as E, which consist of a strip of metal encircling the said sides.

It is to be observed that by giving the sides of the hoops an inclination when they are in

place only the edges of the same contact with the supports. This allows a thorough bonding of the filling.

The construction as hereinbefore described is especially applicable to the formation of floors and ceilings. It is also applicable to the construction of partitions and walls. In Figs. 3 and 4 constructions better adapted to the formation of upright partitions and walls are shown. In Fig. 3 the arrangement is substantially the same as that shown in Figs. 1 and 2, except that in Fig. 3 the hoops on one side break joint with those on the other side. In Fig. 4 an auxiliary support F is shown, which is especially useful where the filling is very thick and heavy, and consequently tends to compress the hoops, or where the distance between the beams A A is considerable. This auxiliary support is a rod passing through or under the hoops parallel to the beams and, where the hoops are elliptical, through their shortest diameters.

In Fig. 6 a construction is shown in which the hoops are circular and are arranged so as to break joint. The beams in this instance are shown as T-beams.

In Fig. 7 a section of flooring filled with plaster is shown, formed of circular hoops, one set resting on the other and breaking joint.

In Fig. 8 a construction is shown formed of elliptical hoops and an auxiliary support passing through them. A supplementary hoop G is shown mounted on the auxiliary support and concentric with the hoop B.

Fig. 9 shows a sectional view of a construction similar to that shown in Fig. 8, except that the hoops are circular.

In Fig. 10 an end elevation of a construction similar to that shown in Fig. 6 is shown, except that the hoops are elliptical instead of round.

In Figs. 12 and 13 is shown a construction in which the hoops are circular and provided with auxiliary supports extending from beam to beam and having a smaller hoop G mounted concentric with the larger hoop B.

In Fig. 14 a construction is shown formed of two series of circular hoops H H and L L, the hoops forming one set being all connected together, as are the hoops forming the other set, and the hoops of one set breaking joint with the hoops of the other set.

In Fig. 16 a construction is shown in which a hoop is provided with flanges on its edges, which project inwardly and is embedded in a suitable filling to form a flagging which is supported on the beams A A.

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

1. In a fireproof construction, the combination of the supports, and the hoops mounted thereon.

2. In a fireproof construction, the combination of the beams having flanges, and the hoops mounted on the said flanges.

3. In a fireproof construction, the combination of the supports and the hoops mounted thereon in two parallel sets, the hoops of one set breaking joint with the hoops of the other set.
4. In a fireproof construction, the combination of the supports, the hoops mounted thereon, and the clips securing said hoops together.
5. In a fireproof construction, the combination of the supports, the hoops, and the hangers securing said hoops to said supports.
6. In a fireproof construction, the combination of the supports, and the hoops having slanting sides mounted thereon.
7. In a fireproof construction, the combination of the supports, and the elliptical hoops mounted thereon.

8. In a fireproof construction, the combination of the supports, and the elliptical hoops having inclined sides mounted thereon.

9. In a fireproof construction, the combination of the supports and the elliptical arched hoops mounted thereon.

10. In a fireproof construction, the combination of the supports, the hoops mounted thereon, and the auxiliary supports carried by the main supports and connected with said hoops.

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

ALEXANDER R. FORDYCE.

Witnesses:

AUGUST W. ROSINGER,
CHARLES T. GLEN.