F. HARTMANN.

STAIR CONSTRUCTION.

APPLICATION FILED JAN. 27, 1913.

1,092,572. Patented Apr. 7, 1914.

Fig. 3.

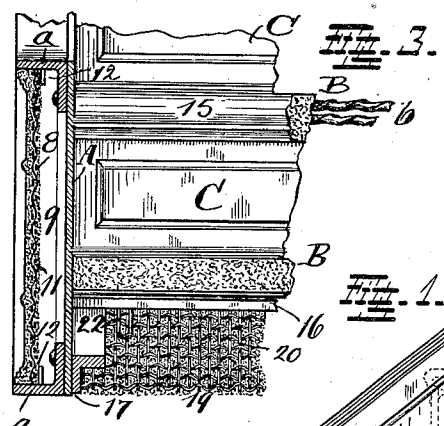


Fig. 1.

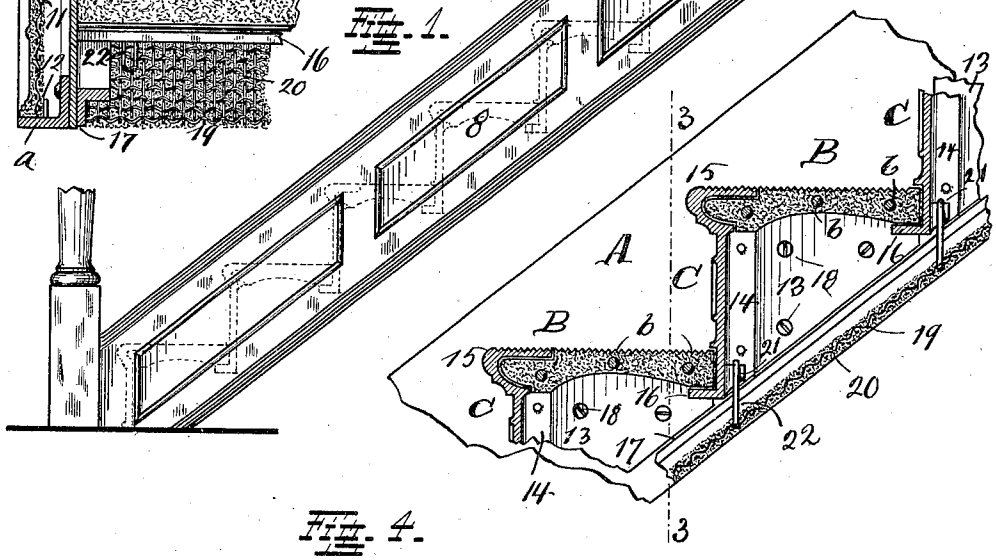


Fig. 2.

Fig. 4.

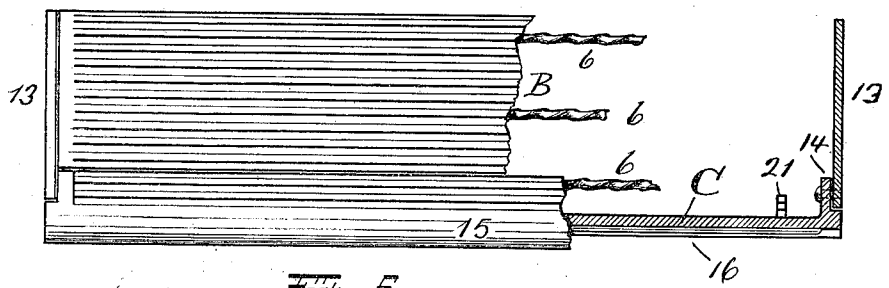
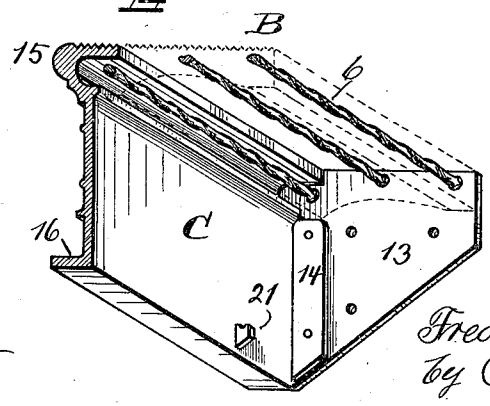


Fig. 5.



Witnesses.
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STAIR CONSTRUCTION.

1,092,572. Specification of Letters Patent. Patented Apr. 7, 1914.

Application filed January 27, 1913. Serial No. 744,302.

To all whom it may concern:

Be it known that I, FREDERICK HARTMANN, a resident of Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Stair Construction; and I do declare the following to be a clear, full, and exact description of my invention, attention being called to the drawing, which accompanies this application and forms a part thereof.

This invention relates to improvements in stair-construction where the materials used are chiefly metal and concrete or similar substances.

Metal, preferably iron in kinds best suited for the purpose, is used to make up the skeleton of the structure and is relied upon for the strength and stability of the same. Concrete, plaster and similar equivalent materials are used to cover this metal skeleton, to protect it against fire and to permit application of ornamental effects.

The invention consists of a construction whereby the various parts of the structure and the different materials thereof are connected and joined in a practical and substantial manner, one of the features being the provision of the steps, which are completed each as a unit which embodies riser and tread, permitting ready connection in position, as well as independent removal of any step for replacement and repair.

In the following specification and particularly pointed out in the claims at the end thereof, will be found a full description of my invention, together with its manner of use, parts and construction, which latter is also illustrated in the accompanying drawing, in which:—

Figure 1, shows in side-elevation a flight of steps. Fig. 2, is an enlarged vertical cross-section of a portion thereof. Fig. 3, is a vertical section taken on line 3—3 of Fig. 2. Fig. 4, is a top-view of one of the steps detached and with parts broken away. Fig. 5, is a perspective view of a portion of such a step viewed from the rear and underside.

Letter A in the drawing, indicates one of the side-frames or horses which serve for supporting the steps. These horses also known as stringers are preferably made of steel and stiffened by means of angles *a*—*a*, secured to their outer sides and at their parallel edges. They are protected against fire by a shell 8, of concrete or plaster which permits also application of ornamental effects as shown in Fig. 1. This shell is spaced from the horse, so as to produce a dead air space as shown at 9, which increases the security against fire. It is supported upon a backing 11, formed preferably of metallic lath, stretched between angles *a*—*a* and held in place by the lugs 12.

The steps consist of the tread-portion B and of the riser C, the former made of concrete and the latter preferably of cast-iron. The concrete is carried by rods *b* supported in opposite cheek-plates 13, connected to the ends of riser C by means of flanges 14. The ends of these rods are preferably riveted into these cheek-plates and serve to stiffen the step-structure. The concrete at the free edge of the tread is protected by a nosing 15 which forms part of the riser and is rearwardly open to permit the concrete to key in. The concrete-portion is formed in position on the riser and on rods *b* in suitable molds. The rear edge of the tread is fitted against the front side of the riser of the step above and upon a flange 16 which projects from the face of said riser, but without connection to said flange.

It will be observed from inspection of Figs. 4 and 5, that each step is complete and forms a self-contained unit, embodying a tread and a riser and ready for connection as a whole to the stair-horses or stringers. For such purpose angles 17 are provided on the inside of the horses which form opposite ledges, adapted to receive the ends of the steps and to support them. By preference, the lower edges of the cheek-plates are fitted to rest upon these ledges.

Screws or bolts 18 are applied whereby the steps at the cheek-plates 13 are connected to the inner side of the stringers. Each step is independently connected and there is no connection between adjoining steps. A soffit may be formed on the underside of the steps and between the horses by means of a coat of concrete or plaster 19 formed upon metallic lath 20. This latter is supported on lugs 21 by means of wire loops 22, said lugs being provided on the underside of the steps. By preference they project from the inner side of the risers.

Having described my invention, I claim as new:

1. In stair-construction, the combination of the steps and metallic side-frames on which they are supported, said side-frames being stiffened by angles on their outer side,

attached to the parallel edges of these sides, and a shell of concrete provided on the outer side of these frames and between these angles and spaced from these frames.

2. In stair-construction, the combination of side-frames, independently formed steps each consisting of a metallic riser, rearwardly projecting cheek-plates connected to the ends of these risers, rods provided between these plates and connected thereto, concrete treads formed on these rods and on the upper edge of the risers, and means engaging the cheek-plates for securing the steps to the side-frames above mentioned.

3. In stair-construction, the combination of side-frames, independently formed steps, consisting of metallic risers provided at their upper edges with a forwardly projecting and rearwardly open nosing and at their lower edges with a forwardly projecting flange, cheek-plates projecting rearwardly from the ends of the risers, rods extending between these plates and connected thereto, concrete treads formed on these rods and joined to the nosing at the upper edge of the risers and fitted to extend over the flange on the lower edge of the riser of the step adjoining and means engaging the cheek-plates for supporting these steps on the side-frames above mentioned.

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

FREDERICK HARTMANN.

Witnesses:

C. SPENGEL,

T. LE BEAU.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."