Dec. 27, 1927. 1,654,029

H. S. ASHENHURST

HORIZONTAL WALL CONSTRUCTION

Filed Feb. 16, 1925

Fig. 1

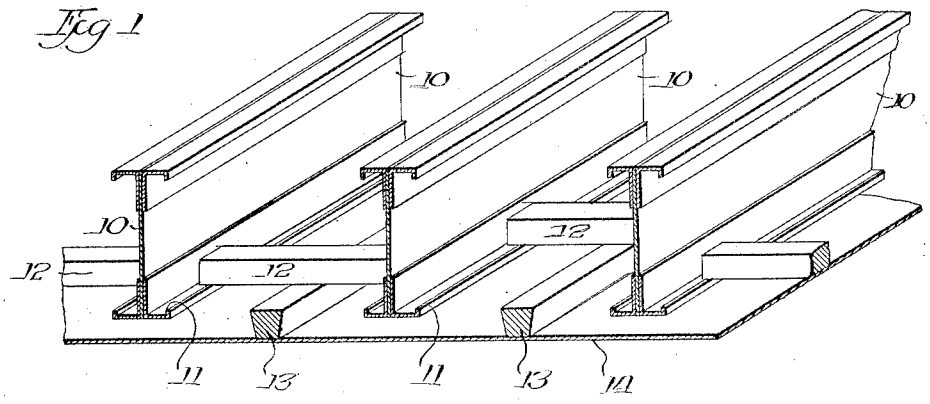
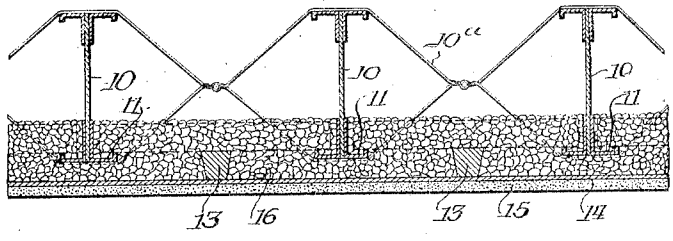


Fig. 2.



Witness:

Inventor:

Harold S Ashenhurst

By Chas F Thwing Atty

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UNITED STATES PATENT OFFICE.

HAROLD S. ASHENHURST, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO INSULEX CORPORATION, OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE.

HORIZONTAL WALL CONSTRUCTION.

Application filed February 16, 1925. Serial No. 9,644.

My invention relates to floor and ceiling construction and particularly to a construction in which the structural elements are fully protected against fire.

One of the objects of my invention is to provide a construction and a method of installing the same in which light-weight steel joists, sometimes called metal lumber, are protected from fire.

Another object of my invention is to provide such a construction in which a high degree of insulation is secured, both as to heat and sound transfer.

A further object is to provide such a construction in which a material is utilized that accomplishes the desired results but which is relatively extremely light, thereby reducing the gross dead load to be carried by the structure. The desired result is secured by utilizing a material such as disclosed in my prior Reissue Patent Number 15,952 of November 25, 1924.

The invention will be more readily understood by reference to the accompanying drawings, in which;

Fig. 1 is a perspective view showing the parts in position to receive the plastic insulating material, and

Fig. 2 is a sectional view showing a completed ceiling with the insulating material in place.

In the drawing, it will be seen that I provide structural elements 10, which may be in the form of steel I-beams as shown, with cross-ties 10^a of wire serving to brace the beams laterally. At any rate, the beams are provided with flanges 11, on which are supported the cross pieces 12, which may be of 2 x 4 wood. Secured to the cross pieces are elements 13, corresponding to sleepers, the side faces of which converge downwardly. The sleepers and cross pieces may be assembled and lowered into the position shown in Fig. 1, or, if the cross ties 10^a are in position, the assembled cross pieces and sleepers may be inserted from beneath by tilting the cross pieces. When suitably positioned, the sheets 14, which may be composed of plaster board, are secured to the sleepers and provide a smooth under surface adapted to receive plaster, indicated at 15.

When the parts are assembled, as described, a body of plastic material such as disclosed in my patent heretofore identified, is mixed and promptly poured onto the plaster board. It immediately expands and flows up around the side edges of the flanges. If desired, a quantity may be poured that will completely imbed the lower portions of the I-beams. The material also rises into close contact with and surrounds the sleepers and due to their tapered form a downward pull on the sleepers will cause a lateral wedging action on the cellular material and hold the sleepers firmly in position.

The plastic material disclosed is relatively very light in weight and the plaster board will furnish ample support therefor. In Fig. 2, the cellular material is indicated at 16, the flanges of the I-beams being embedded therein.

While I prefer to use the form of material as disclosed and claimed in my said prior patent, I do not wish to be restricted in this particular except so far as it is specifically claimed. I have found that very good results may be attained by a mixture as follows,—100 pounds of calcined gypsum, 3½ ounces of commercial retarder, 6¼ pounds of a suitable carbonate such as calcium carbonate, and 12½ pounds of aluminum sulphate containing its water of crystallization, all of such ingredients being finely ground and thoroughly mixed in a dry state.

The arrangement provides complete fireproofing so far as concerns the communication of flames from one floor to another. The structural steel elements are completely protected and efficient insulation as to heat and sound is assured. The material employed is light in weight and may be installed at extremely low labor cost.

I contemplate the utilization of any other suitable means for providing a form, either permanent or temporary, beneath and spaced from the lower extremities of the structural elements, on which the plastic mass may be poured, in lieu of the plasterboard 14 as illustrated. The resulting monolithic body of rigid cellular material will effectually insulate against sound and heat transference and will fireproof the joists, whether of wood or metal. Preferably I employ a permanent fireproof form element, such as plasterboard, and thereby avoid the necessity for reinforcement within the body of insulating material.

Obviously the construction shown may be modified within certain limits and I do not

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wish to be limited except as indicated in the appended claims.

I claim:

1. In horizontal wall construction, the combination of flanged structural elements, sleepers supported by the flanges of said elements, an imperforate ceiling element supported by the sleepers, and a monolithic body of cellular material supported on said ceiling element and embedding the lower extremities of the structural elements therein.

2. In horizontal wall construction, the combination of flanged structural elements, sleepers supported by the oppositely projecting flanges of adjacent elements, a ceiling element secured to the sleepers, and a monolithic body of fireproof cellular material supported on said ceiling element and embedding the lower extremities of the structural elements therein.

3. In a building the combination of joists, sleepers disposed between the joists, the bottom faces of the sleepers being in a plane below the bottom faces of the joists, transverse members to which the sleepers are connected, said transverse members being supported on the joists, an imperforate form element secured to the bottom faces of the sleepers, and a monolithic body of cellular insulating material supported on said form and embedding said sleepers and the lower extremities of said joists.

4. The combination with the joists of a building, of sleepers extending parallel to and located between said joists, means for supporting said sleepers in a depending position, an imperforate ceiling element secured to said sleepers and located in spaced relation below said joists, and a monolithic body of fire-proof cellular insulating material poured into place on said ceiling element and embedding the sleepers and the lower extremities of said joists.

5. The combination with the joists of a building, of sleepers, cross bars secured to the sleepers, the ends of the bars resting on said joists, a fire-proof ceiling element permanently secured to said sleepers, and a rigid body of cellular insulating fire-proof material rested on said ceiling element and embedding the sleepers and portions of said joists.

Signed at Chicago, Illinois, this 13th of February A. D. 1925.

HAROLD S. ASHENHURST.

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