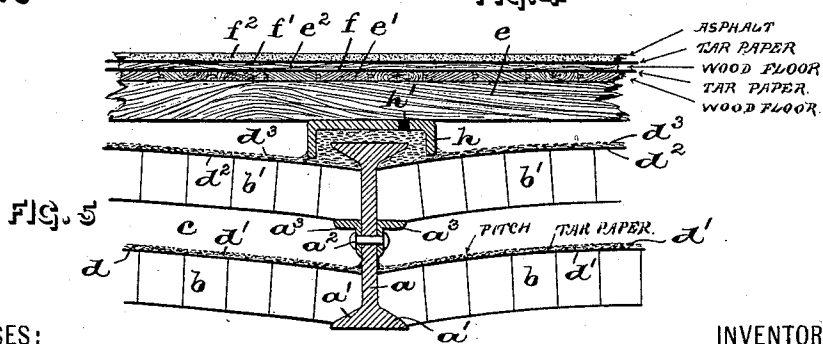
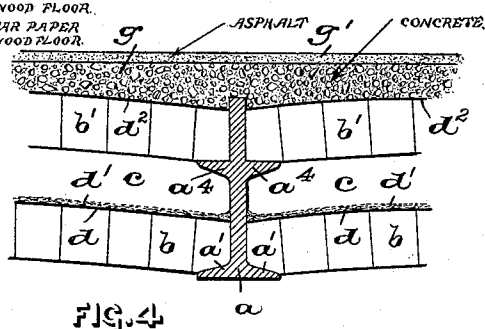
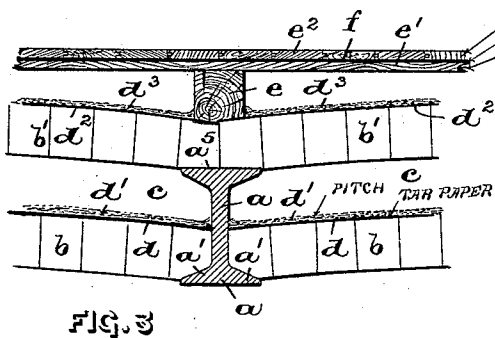
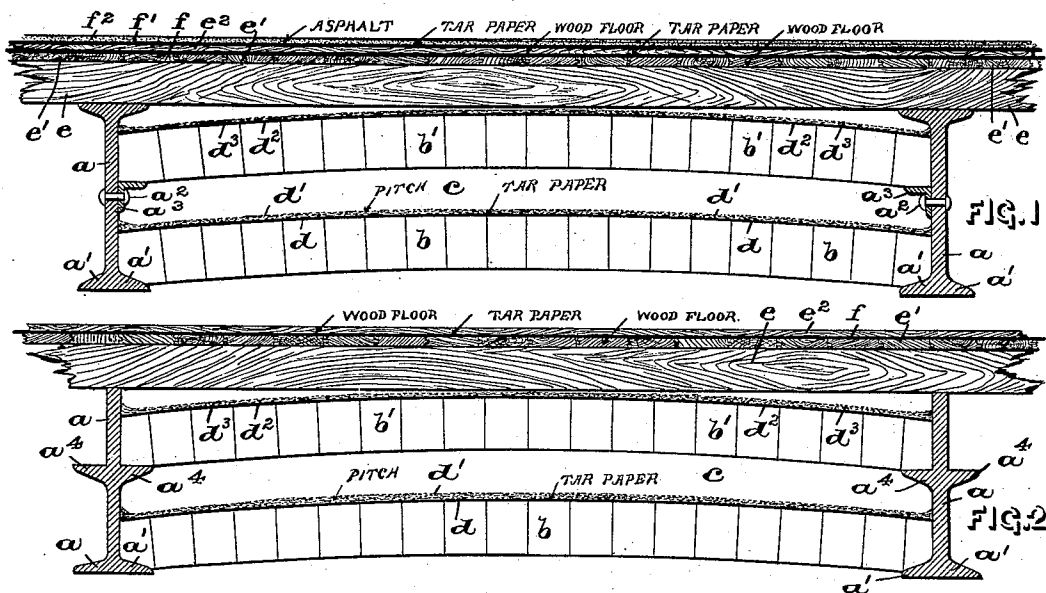


(No Model.)

I. G. HOOPER.
FLOOR OR ROOF CONSTRUCTION FOR COLD STORAGE OR OTHER BUILDINGS.
No. 572,259. Patented Dec. 1, 1896.



WITNESSES:

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FLOOR OR ROOF CONSTRUCTION FOR COLD-STORAGE OR OTHER BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 572,259, dated December 1, 1896.

Application filed March 19, 1896. Serial No. 583,860. (No model.)

To all whom it may concern:

Be it known that I, IRVIN G. HOOPER, 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 Floor or Roof Constructions for Cold-Storage or other Buildings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention has reference to a novel arrangement and construction of the roofs and floors of buildings, such as in cold-storage houses, breweries, and the like; and the invention has for its object to provide a flooring or roof construction for cold-storage buildings and the like having a perfectly-insulated air-space, which prevents the cold air within the building from becoming contaminated with the warmer atmosphere on the outside of the building, it being a well-known fact that the air will find its way through the brick or stone walls and the flooring or roofing unless properly insulated.

The invention therefore consists in the novel construction of a floor or roof embodying the principles of my present invention, and which will be hereinafter fully set forth, and also in the minor arrangements and combinations of the parts to be fully brought out in the accompanying specification, and finally embodied in the clauses of the claim.

With these several ends in view the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a cross-section of a portion of a floor or roof made in conformity with my invention, and Fig. 2 is a similar view of a portion of a roof or floor of a modified form of construction. Fig. 3 is a sectional view of a portion of a floor or roof of still another slightly-modified form of construction, and Fig. 4 is a similar view of an asphalt floor made according to the provisions of my invention. Fig. 5 is another sectional view of a portion of a floor or roof of still another modified form of construction.

Similar letters of reference are employed in all the above-described views to indicate like parts.

In the several views of the drawings, in which I have represented in section portions of a roof or floor to be used in cold-storage houses and the like, *a a* are the usual forms of iron girders or other like beams, having their ends set in the walls of the building in the usual manner. On the lower flanges *a'* of said beams I start the usual form of brick arching *b*, which is constructed in the well-known manner to produce an efficient construction which will thoroughly resist fire and exclude air-drafts from the portions where the arches are joined to the iron beams. Extending along the entire length of the web of said beams *a*, at about the middle thereof, are secured by means of suitable rivets *a²* the angle-irons *a³*, as clearly represented in Fig. 1. Upon said angle-irons *a³* I build up a second brick arch, *b'*, similar to the arch *b*, of sufficient thickness, so that its upper arched surface and the lower arched surface of the arch *b'* will form a suitable air-space *c* between the respective arches and the iron beams *a* for supporting the floor or roof.

As will be seen from an inspection of Fig. 1, the upper curved surface of the lower arch *b* has been insulated, first, with a layer of tar-paper *d* and then with a coating of pitch *d'* of proper thickness, while the upper curved surface of the upper arch *b'* is similarly insulated with a layer of tar-paper *d²* and a coating of pitch *d³* of the proper thickness, thereby producing a thoroughly-insulated air-space between the two arches *b* and *b'*, and a floor or roof will be the result which is a non-conductor of either heat or cold, causing the retention of the cold air within the building and preventing the warmer air from striking through said arches. Upon the upper portions of said iron beams *a a* are laid the wooden cross-beams *e*, and upon this the wooden floor-boards *e'*, then a layer of tar-paper *f*, a second layer of tar-paper *f'*, and upon this is arranged a layer *f²* of asphalt, concrete, or other like material.

From an inspection of Fig. 2 it will be seen that the layer of tar-paper *f'* and the asphalt or other like layer *f²* may be dispensed with, using simply the two layers of floor-boards *e'*

and e^2 , with the tar-paper f between them. In said Fig. 2 I have also illustrated the iron girders or beams a , provided with a centrally-arranged flange a^1 , which is formed integral with the web of the beam, thereby dispensing with the use of the rivets a^2 and the time and labor in securing the angle-irons a^3 to the web of the girders. The upper arch b' is started on these projections or flanges a^1 , as clearly represented in said Fig. 2, and in all other respects the arrangement and construction of the several parts are similar to that illustrated in said Fig. 1.

In Fig. 3 I have illustrated a modified form of construction embodying the principles of my invention, in which the arches b' b' are started directly upon the upper surfaces a^5 of the girders a and the wooden cross-beams e are laid directly upon or in the arches b' b' , substantially as shown. When the invention is to be used in connection with floors other than wood floors, there is placed upon the upper surface of the arches b' a heavy layer of concrete g , which may be finished off in the usual manner, or may have a finish g' of asphalt, as illustrated in Fig. 4.

To prevent any air from getting between the web of the girders a and the end courses of the upper arches b' in case of a faulty construction, I can cover the upper portion of the girder a with a suitable cover h , of wood or other material, in such a manner to leave an empty space around said upper portion of the girder, and through a hole h' in said cover I pour hot pitch, which will entirely cover the upper part of the girder a and hence form an air-tight joint at the point where the arch b' joins the web of the girder.

From the above description it will be seen that I have devised a simple construction for the floors and roofs of cold-storage buildings, breweries, and the like, provided with well-insulated air-spaces, which will prevent the cold air in one room from being contaminated with the warmer air in another room or from the outside atmosphere.

Of course it will be evident that changes may be made in the details of the arrangements and combinations of the parts which go to make up the floor or roof, and hence I do not limit my invention to the exact arrangements and combinations of the parts as herein set forth; as, for instance, in place of the tar-paper and pitch employed, I may use any other suitable non-conductor of heat, as asbestos, &c., or, in place of the iron girders a , I may use other like beams or longitudinal courses of brick.

Having thus described my invention, what I claim is—

1. In a building, the herein-described floor or roof construction, comprising therein, in combination, girders, as a , or the like, arches of brick, stone or the like, supported thereon, formed with an air-space between said arches, and an insulating material on said arches, consisting of a layer of tar-paper and a layer of

pitch, substantially as and for the purposes set forth.

2. In a building, the herein-described floor or roof construction, comprising therein, in combination, iron girders, as a , longitudinally-arranged flanges a' on said girders, and longitudinally-arranged angle-irons or projections at a point half-way between the lower and upper surfaces of said girders, a brick, stone or other like arch b resting on said projection a' , a brick, stone or other like arch b' resting on said angle-irons or projections at the middle of each girder, said arches forming an air-space c between them, and an insulating material on each arch, substantially as and for the purposes set forth.

3. In a building, the herein-described floor or roof construction, comprising therein, in combination, iron girders, as a , longitudinally-arranged flanges a' on said girders, and longitudinally-arranged angle-irons or projections at a point half-way between the lower and upper surfaces of said girders, a brick, stone or other like arch b resting on said projection a' , a brick, stone or other like arch b' resting on said angle-irons or projections at the middle of each girder, said arches forming an air-space c between them, and an insulating material on each arch, consisting of a layer of tar-paper and a layer of pitch, substantially as and for the purposes set forth.

4. In a building, the herein-described floor or roof construction, comprising therein, in combination, iron girders, as a , longitudinally-arranged flanges a' on said girders, and longitudinally-arranged angle-irons or projections at a point half-way between the lower and upper surfaces of said girders, a brick, stone or other like arch b resting on said projection a' , a brick, stone or other like arch b' resting on said angle-irons or projections at the middle of each girder, said arches forming an open air-space c between them, and an insulating material on each arch, wooden beams on said iron girders, floor-boards on said beams, and a layer of tar-paper between said floor-boards, substantially as and for the purposes set forth.

5. In a building, the herein-described floor or roof construction, comprising therein, in combination, iron girders, as a , longitudinally-arranged flanges a' on said girders, and longitudinally-arranged angle-irons or projections at a point half-way between the lower and upper surfaces of said girders, a brick, stone or other like arch b resting on said projections a' , a brick, stone or other like arch b' resting on said angle-irons or projections at the middle of each girder, said arches forming an open air-space c between them, and an insulating material on each arch, wooden beams on said iron girders, floor-boards on said beams, and a layer of tar-paper between said floor-boards, substantially as and for the purposes set forth.

6. In a building, the herein-described floor or roof construction, comprising therein, in

combination, iron girders, as *a*, arches of brick,
stone or the like, supported by said girders,
formed with an air-space between them, a
layer of tar-paper and pitch on said arches,
5 a cover, as *h*, over the upper portions of each
girder, and pitch arranged under said cover,
all substantially as and for the purposes set
forth.

In testimony that I claim the invention set
forth above I have hereunto set my hand this 10
18th day of March, 1896.

IRVIN G. HOOPER.

Witnesses:

FREDK. C. FRAENTZEL,
WM. H. CAMFIELD, Jr.