Feb. 13, 1934. G. H. LENKE 1,946,977

SUPER GLASS VAULT LIGHT CONSTRUCTION

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Fig. 1.

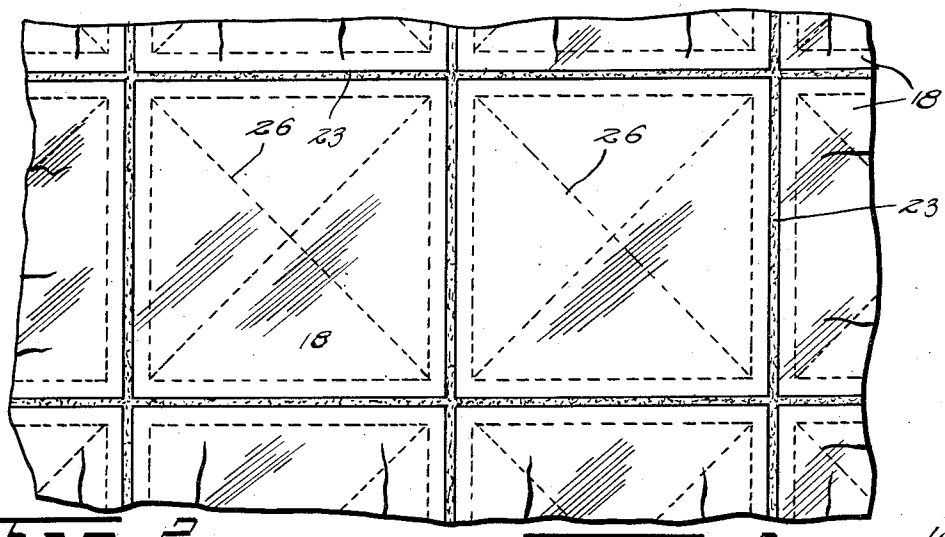


Fig. 2.

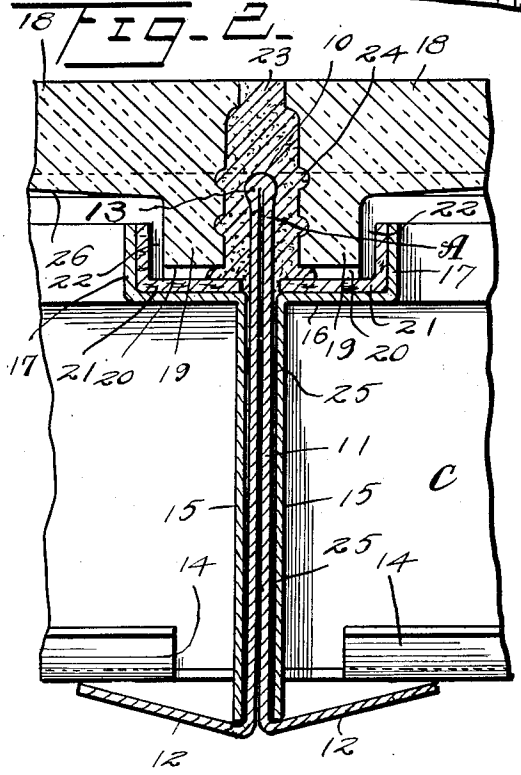
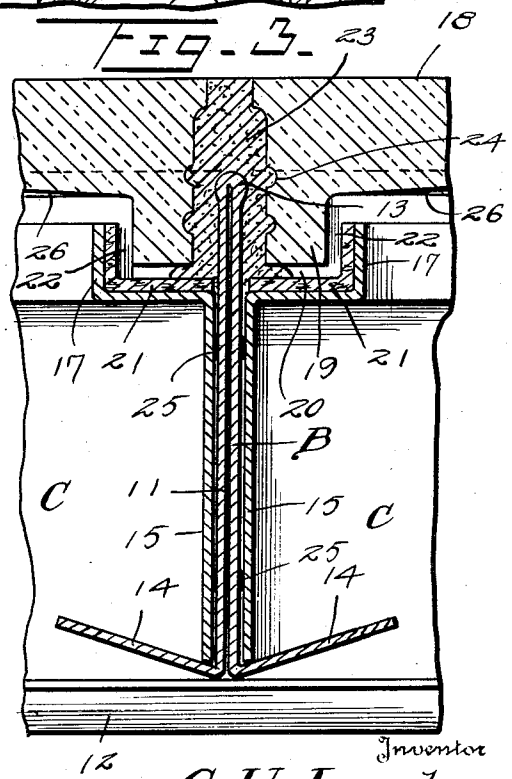


Fig. 3.



Inventor

G. H. Lenke

By Fredric B. Wright

Attorney

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Fig. 4.

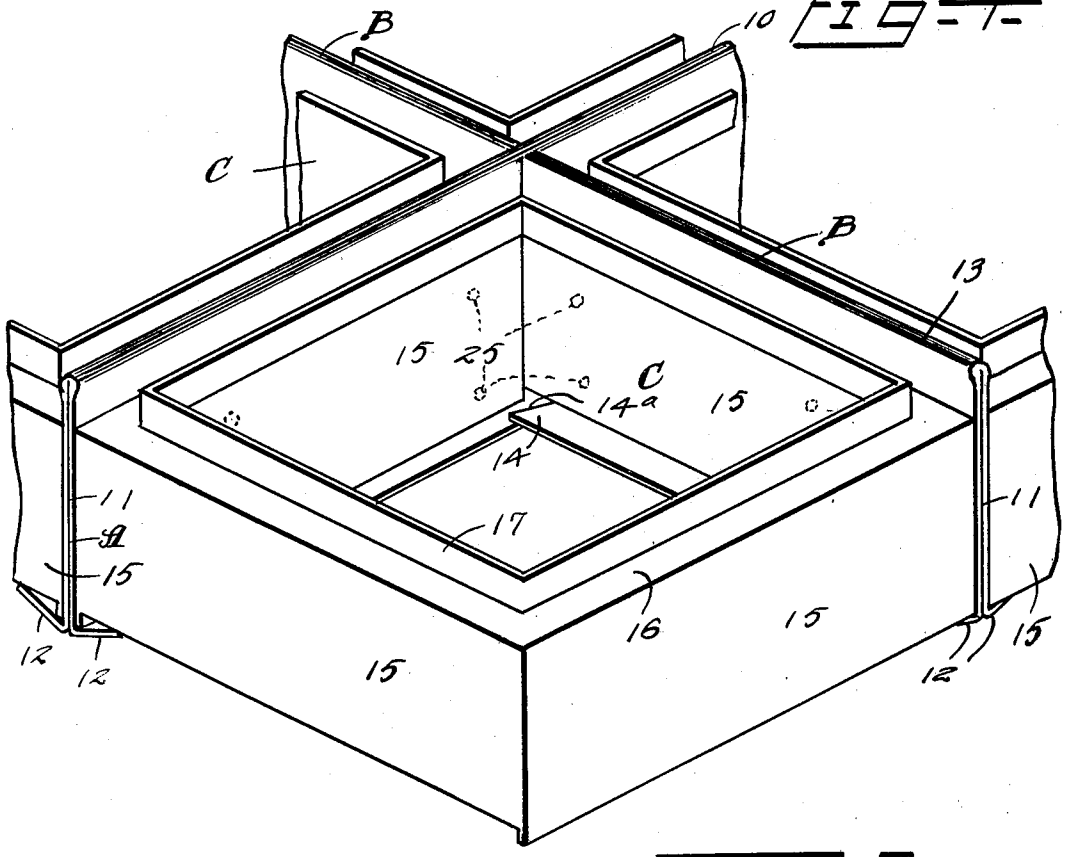
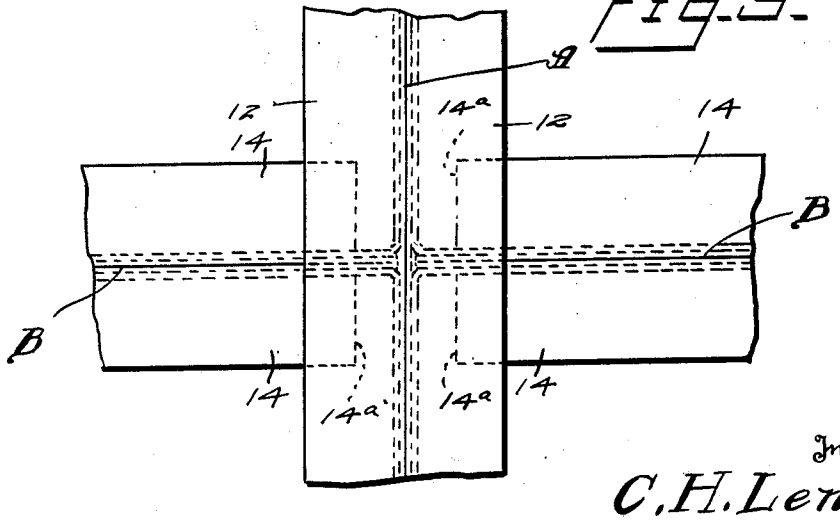


Fig. 5.



Inventor

C. H. Lenke

Frederic B Wright

By

Attorney

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UNITED STATES PATENT OFFICE

1,946,977

SUPER GLASS VAULT LIGHT CONSTRUCTION

George H. Lenke, Cicero, Ill., assignor of one-third to Julius J. Ohlis and one-third to James H. Old, both of Cicero, Ill.

Application April 28, 1931. Serial No. 533,493

7 Claims. (Cl. 94—27)

This invention relates to structures for supporting vault lights, floor lights, sky lights and roof lights and particularly to a supporting structure of sheet metal.

One of the objects of this present invention is the provision of a structure of this character wherein the longitudinal and transverse elements of the supporting structure are held apart and properly spaced from each other by rectangular cells acting as templates for this purpose.

A further object is to provide a structure of this character in which the supporting elements may be cut to size at the factory and shipped to the job and wherein the cells or templates will be made at the factory and shipped to the job, the cells constituting, as they are inserted, means whereby the workmen may determine, without measurement, the spacing between the transverse elements and between the longitudinal elements.

A further object is to provide a structure having the longitudinal and transverse elements formed of sheet metal, each element being folded upon itself to provide a two-ply web, the lower margins of the two-ply web being bent upwardly and outwardly to constitute condensation gutters and in this connection to form the transverse elements of less depth than the longitudinal elements so that the gutters of the transverse elements will be disposed slightly above and discharge upon the gutters of the longitudinal elements.

A further object is to so form the cells or templates that they may be inserted in the rectangular openings defined by the transverse and longitudinal elements and may be spot welded or otherwise attached to these elements and to so form the cells that when so attached to the longitudinal and transverse elements, the cells will provide seats upon which the lights may rest, the lights extending above the upper edges of the transverse and longitudinal elements and the templates and the space between the lights being filled with tar and sulphur or other filling material.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a fragmentary plan view of a vault light constructed in accordance with my invention;

Figure 2 is a transverse section through one of the longitudinal elements and the corresponding template;

Figure 3 is a section taken at right angles to Figure 2;

Figure 4 is a perspective view of the longitudinal and transverse elements with the template disposed therein;

Figure 5 is an under side plan view showing the junction of the longitudinal and transverse elements.

Referring to these drawings, it will be seen that the longitudinal elements which are designated generally A are formed of sheet metal, the sheet metal being folded upon itself at 10 to provide two webs disposed in parallel relation, the webs being designated 11, each of these webs at its lower margin being outwardly and upwardly extended as at 12.

The transverse members B are formed in the same manner, that is, each is formed of sheet metal bent upon itself at 13 to provide a two-ply web to the element, the lower margins of the webs being bent outwardly and upwardly at 14 to provide a condensation gutter. The longitudinal elements have any desired length. The transverse elements B, however, are cut to fit between the longitudinal elements and thus define a plurality of rectangular spaces. In most cases, these rectangular spaces will be approximately nine inches square. Disposed within these spaces are the rectangular cells or templates C. These are made up to provide four sides designated 15. Each of these sides at its upper end is inwardly extended as at 16, then upwardly extended as at 17 so that when these cells are in place, the flanges 16 and 17 constitute seats as illustrated more clearly in Figure 2, upon which the panes or lights of glass 18 may rest and be supported. Each of these lights 18 is made of relatively thick glass and each light is rectangular in form and is formed to provide the downwardly extending rib or flange 19 on each of its sides. These flanges 19 are cut away at 20 so that the flanges constitute feet extending down into the seats 16 behind each flange 17, these feet resting upon cork strips 21 angular in cross section and resting upon the seats 16 and 17. Preferably the flanges or feet 19 do not bear upon their outside faces upon the cork strips 21 but a space 22 is left.

It will be noted that the two ply web of each element A and B extends upward above flanges 17 and is enlarged as at *a* to form an anchor for a plastic filling 23 of any suitable material, in actual practice consisting of a tar and sulphur compound. It will be also noted that the outer edge faces of the lights 18 are grooved at 24 so as to secure anchoring engagement with this

filling. The filling is flush with the lights 18 so that a surface is provided which is perfectly smooth throughout its entire area and may be used for supporting heavy weights or as a surface upon which persons may walk. This filling is anchored in place by the upward projection of the webs of the elements A and B and by the grooves 24 so that there is no chance of the filling becoming detached.

Each template or cell C is preferably welded at four spots 25 to the longitudinal and transverse elements A and B, each cell being disposed so as to rest upon the upwardly turned gutter flanges 14 and be supported in this position during the welding operation.

It will be seen that this construction is very simple and that it may be assembled and welded without the workman having to do any exact measurement inasmuch as the cells C act as templates absolutely controlling the spacing of the elements A from each other and the elements B from each other. After the templates have been put in place and welded, the structure is thoroughly braced and held in its assembled position and forms a unitary supporting structure relatively light but of amply sufficient strength for the purpose intended.

The under side of the glass is preferably formed with four faces 26, these faces inclining downward from the center of each light 18 toward the side edges thereof.

Leakage of water through the structure from the outside or condensation from the under side of the glass or around the supporting elements is taken care of by the condensation gutters at the lower portion of the main supporting carriers of the cross or intermediate members.

It is to be understood that any water of condensation which may flow on to the seats formed by the flanges 16 or 17 or on to the cork supports for the glass will overflow into the gutters 14 and 12 and any water of condensation forming on the sheet metal members A and B will, of course, flow down into these gutters.

Of course, it will be understood that the gutters 14 are cut away at 14*a* as shown in Figure 4 so as to permit the water gathered in the gutters 14 to discharge into the gutters 12. It will likewise be seen that the cross or intermediate members B are of exactly the same form and shape as the main supporting and carrying members A except that they differ in the depth and vertical section. The templates being of the proper dimensions are disposed in the openings between the elements, thereby forming a grid or frame which is welded at the points 25 or at any other desired point, thereby fabricating a rigid and strong structure.

While I have referred before to the use of glass panes as resting upon the seats, it will, of course, be understood that rectangular slabs of other materials than glass might be used if desired. These would have the same form as the glass panes and would operate in exactly the same way except that they would not be transparent. The elements A and B and the template C might be made of any suitable sheet metal.

While I have shown in the drawings a construction which has been found particularly effective, it is obvious that many minor changes might be made in the details without departing from the spirit of the invention as defined in the appended claims.

I claim:—

1. A structure of the character described, including longitudinal elements, and transverse elements extending between the longitudinal elements, the longitudinal elements being formed at their lower edges with upwardly and laterally extending flanges, the transverse elements being less in depth than the longitudinal elements and having outwardly and upwardly extending flanges resting upon the flanges of the transverse elements and constituting gutters discharging into the gutters formed by the upwardly and outwardly extending flanges on the longitudinal elements.

2. A structure of the character described, including longitudinal elements and transverse elements extending between the longitudinal elements, the longitudinal elements being formed at their lower edges with upwardly and laterally extending flanges, the transverse elements being less in depth than the longitudinal elements and having outwardly and upwardly extending flanges resting upon the flanges of the transverse elements and constituting gutters discharging into the gutters formed by the upwardly and outwardly extending flanges on the longitudinal elements, rectangular cells disposed in the rectangular spaces defined by the longitudinal and transverse elements and extending downwardly to said gutters, the upper ends of each cell on all four sides being flanged inwardly and upwardly to form light supporting seats, and lights having flanges on all four sides extending downwardly and resting upon said seats, the lights extending above the longitudinal and transverse elements and the spaces between said lights being filled with initially plastic material.

3. A structure of the character described, including longitudinal elements and transverse elements extending between the longitudinal elements and defining rectangular spaces, the upper edges of the longitudinal and transverse elements being on the same level, the lower edges of the longitudinal elements having upwardly and outwardly directed flanges forming gutters and the lower edges of the transverse elements having upwardly and outwardly extending flanges forming gutters resting upon and discharging into the gutters formed on the longitudinal elements, rectangular cells disposed in rectangular spaces, each cell having four side walls, the upper end of each side wall being inwardly extended and then upwardly extended, the cells having a height less than the height of said longitudinal and transverse elements, and lights fitting in said spaces defined by the longitudinal and transverse elements and having downwardly extending flanges operatively resting upon said flanges of the cells, the lights extending upwardly above the longitudinal and transverse elements, the spaces between said lights being filled with initially plastic material, the upwardly projecting portions of the transverse and longitudinal elements acting as anchors for said material.

4. A structure of the character described, including longitudinal and transverse elements, each element being formed of a single sheet of metal folded longitudinally along its middle to provide a two-ply web, the lower edge of the web having opposed outwardly extending flanges.

5. A structure of the character described, including longitudinal and transverse elements, each element being formed of a single sheet of metal folded longitudinally along its middle to provide a two-ply web, the lower edge of the web having opposed outwardly and upwardly extending flanges constituting condensation gutters, the

transverse elements having a depth less than the depth of the longitudinal elements, the upper edges of the transverse elements being flush with the upper edges of the longitudinal elements, but the gutters of the transverse elements discharging into the gutters of the longitudinal elements, lights disposed in the spaces defined by the longitudinal and transverse elements, and means disposed in said spaces and connected to the longitudinal and transverse elements for supporting said lights.

6. A structure of the character described, including longitudinal and transverse elements, each formed of a single sheet of metal bent longitudinally along its middle to provide a two-ply web, the lower edges of the two-ply web being bent outwardly and upwardly to provide lateral condensation gutters, the gutters of the transverse elements discharging into the gutters of the longitudinal elements, rectangular cells disposed in the spaces defined by the transverse and longitudinal elements and attached thereto, each side of said cells having inwardly and upwardly extending flanges defining a seat extending entirely around the four sides of the cell, lights disposed within said spaces, each having a marginal downwardly extending flange resting upon the seats thus formed, the lights extending above the longitudinal and transverse elements and initially plastic material filling the space between said lights and extending downwardly to said seats whereby the plastic material is anchored in place by the upper margins of the longitudinal and transverse webs.

7. In a structure of the character described, longitudinal and transverse elements, each element being formed of a single sheet of metal folded longitudinally along its middle to provide a two-ply web, light supporting seats formed on each side of the web, lights supported by the longitudinal and transverse elements, each light having a marginal portion extending down into and supported on said seats, and initially plastic material filling the spaces between said lights and extending downwardly to said seats, the upper margins of the two-ply webs of the longitudinal and transverse elements being formed at their upper ends to have anchoring engagement with said initially plastic filling.

GEORGE H. LENKE.