

March 10, 1936.

N. E. DAWSON

2,033,689

ROOF STRUCTURE

Filed July 8, 1935

2 Sheets-Sheet 1

Fig. 1.

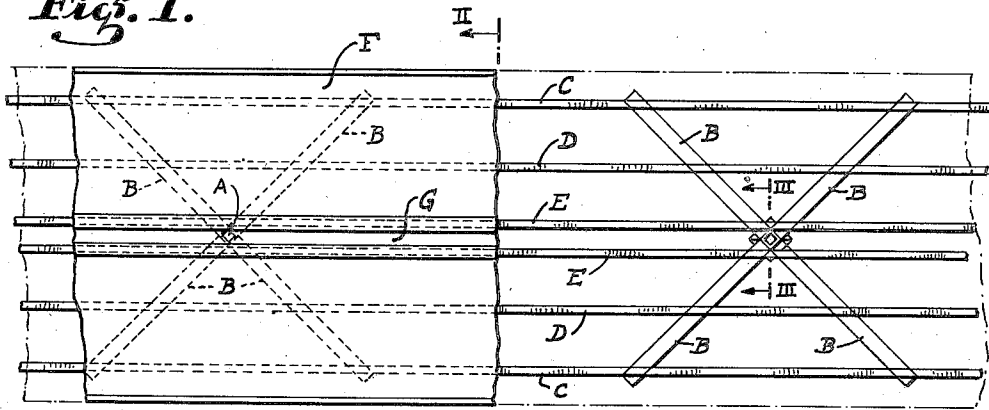


Fig. 2.

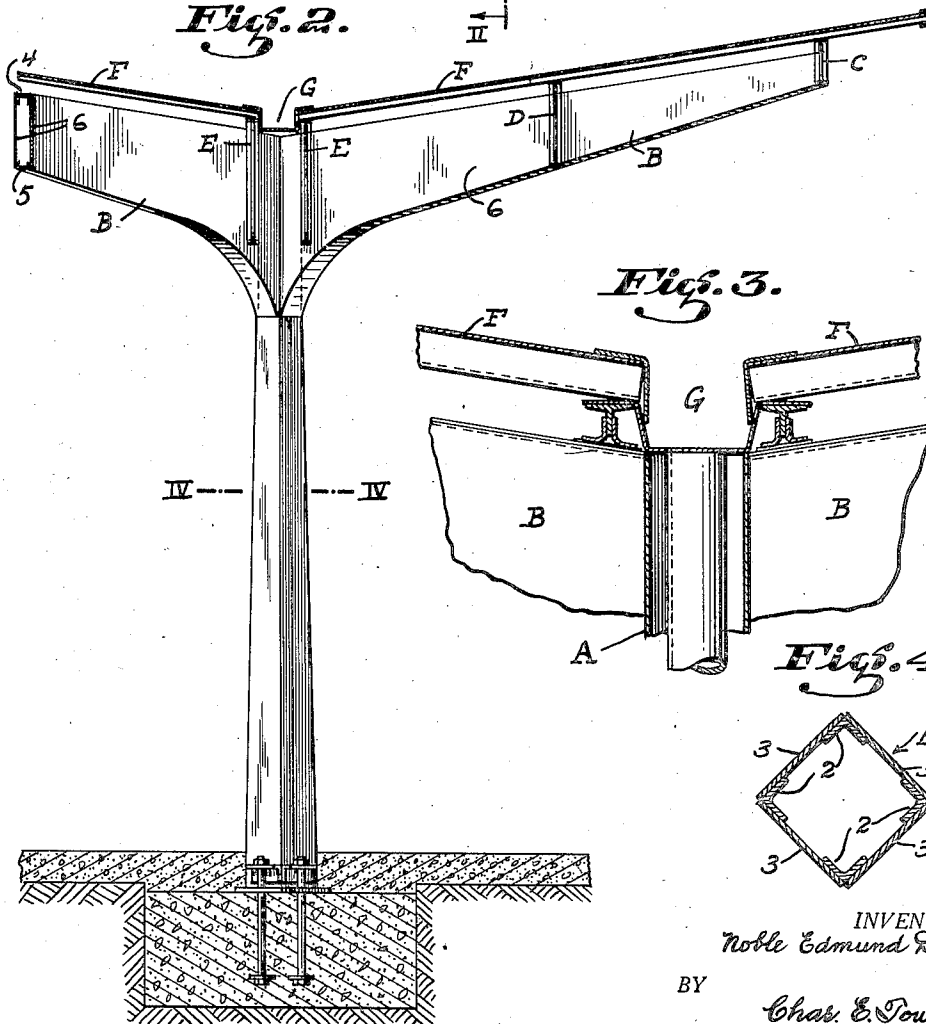


Fig. 3.

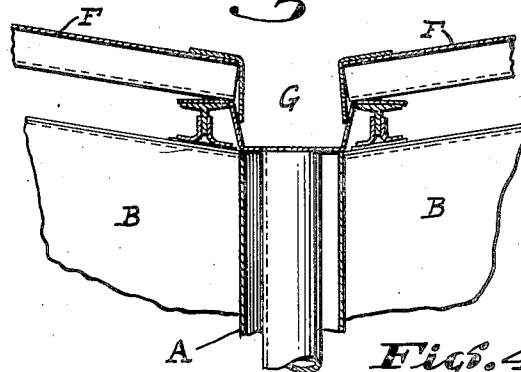
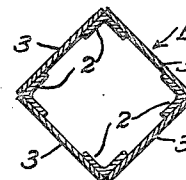


Fig. 4.



INVENTOR.
Noble Edmund Dawson.

BY

Chas. E. Townsend.
ATTORNEY.

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Fig. 5.

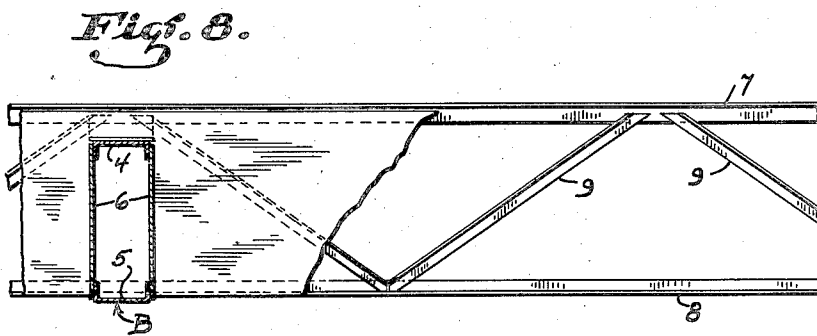
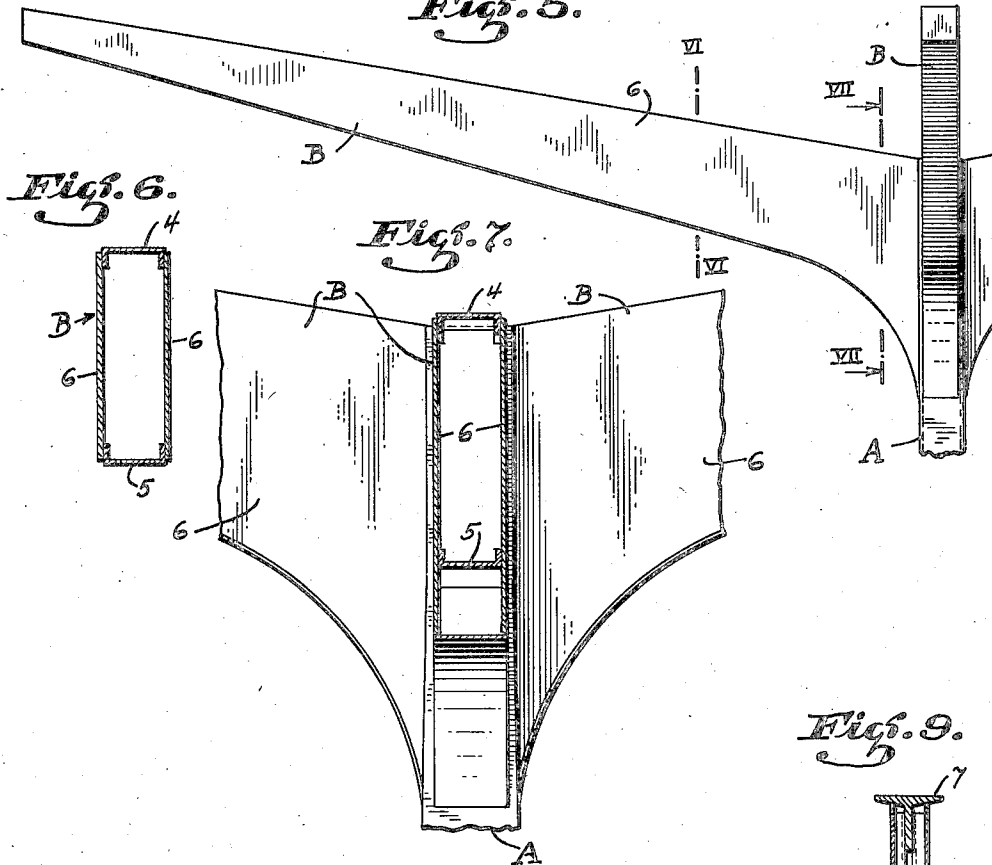
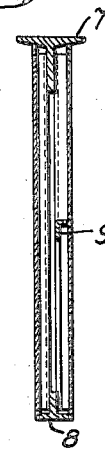


Fig. 9.



INVENTOR.
Noble Edmund Dawson.

BY

Chas. E. Townsend.
ATTORNEY.

UNITED STATES PATENT OFFICE

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ROOF STRUCTURE

Noble E. Dawson, Los Angeles, Calif.

Application July 8, 1935, Serial No. 30,218

3 Claims. (Cl. 108—1)

This invention relates to roof structures and especially to that type employed in conjunction with railroad platforms, train sheds, and like structures.

5 The object of the present invention is generally to improve and simplify the construction of roof structures such as used in conjunction with railroad platforms, train sheds, and the like; to provide a roof which may be constructed with considerable economy and reduction in weight and yet insure great strength and, in particular, to provide a roof of the character described which is supported by a series of longitudinally extending joists; the joists being supported by 10 girders arranged diagonally to the longitudinally extending joists and the girders being in turn supported by and forming the upper arms of a series of longitudinally spaced columns.

The structure is shown by way of illustration 15 in the accompanying drawings, in which—

Fig. 1 is a plan view of the structure showing the roof cover removed;

Fig. 2 is a vertical cross section taken on line II—II of Fig. 1;

25 Fig. 3 is an enlarged cross section taken on line III—III of Fig. 1;

Fig. 4 is a cross section taken on line IV—IV of Fig. 2;

30 Fig. 5 is an enlarged side elevation of one of the girder arms;

Fig. 6 is a cross section of line VI—VI of Fig. 5;

Fig. 7 is a cross section taken on line VII—VII of Fig. 5;

35 Fig. 8 is an enlarged side elevation of one of the roof joists; and

Fig. 9 is an end view of the same.

Referring to the drawings in detail, and particularly Figs. 1 and 2, A indicates a series of 40 supporting columns, which are positioned on the longitudinal center line of the roof and which are spaced apart a considerable distance. Welded, or otherwise secured, to the upper ends of the columns are girder arms B, which are 45 diagonally positioned with relation to a series of joists indicated at C, D and E. The joists C, D and E extend longitudinally of the roof and are supported by the diagonally positioned girders B and on top of the joists is placed a roof covering, which may be constructed of steel or 50 other suitable material, and which is generally indicated at F.

The columns A are, in this instance, built up and consist of vertically positioned angle bars 55 2 disposed at the corners to which are welded

side plates 3 constructed of steel or a similar material. The girders are similarly built up, see Figs. 5, 6 and 7, the upper and lower portions of the girders being formed of channel bars, as shown at 4, and 5, to which are welded side 5 plates 6—6; the girder arms being, in turn, welded or otherwise secured to the columns A as shown. The joists are also of the built up type and are best shown in Figs. 8 and 9. They consist of upper and lower T bars, such as indicated at 7 and 8, which are tied together by 10 angle bars 9 diagonally disposed between the same.

In actual practice the entire structure is assembled by arc welding, or the like, and it forms 15 one complete unit. The diagonally disposed girder arms B are welded to the columns A and form an integral part thereof. The joists are, in turn, welded to the girder arms and if the steel roof is employed, it will be welded to the 20 joists, thus providing a flat diaphragm to take up torsion and longitudinal or horizontal stresses. If other type of roof covering is used, separate bracing to stay the longitudinal joists must be provided at the top and bottom cords of the 25 joists. The load of the roof covering is carried by the joists. These, in turn, transfer the load to the diagonal girders and these, in turn, to the columns.

From the foregoing it will be noted that I have 30 provided a roof which may be constructed with considerable economy and yet insure great strength. The entire roof is built of structural members of materially reduced weight and it has been found to decidedly increase the spacing 35 between the supporting columns due to the diagonal placing of the girders with relation to the roof supporting joists. The economy of the structure is a function of span and load and the arrangement and spacing of the supporting columns. By placing the girders at an 40 angle of 45° with relation to the center line of longitudinal axis of the roof, the joist span is reduced and the size and weight of the individual joists is reduced. The combination and arrangement of the several members permit short 45 spans, light load upon each member and consequently reduction in the size of the members, thereby lessening cost of the total construction. The arrangement of the diagonal girders provides a cantilever design with all loads carried 50 directly to and centered upon the longitudinally spaced supports, to-wit, the columns.

The detailed construction of the columns, the girders, and the joists may, of course, be varied 55

but the arrangement here disclosed is essential to economy of construction.

With a steel covered roof the gutter indicated at G will be arranged centrally of the roof. The gutter construction becomes exceedingly simple when reference is made to Fig. 3, and drainage may be taken care of at the ends or downwardly through the columns, and while this and other features of the invention have been more or less specifically described and illustrated, I wish it understood that various changes may be resorted to within the scope of the appended claims. Similarly, that the materials and finish of the several parts employed may be such as the manufacturer may decide, or varying conditions or uses may demand.

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

1. A structure of the character described comprising a roof covering, a plurality of joist members disposed longitudinally of the roof and supporting the roof covering, a plurality of spaced supporting columns disposed longitudinally of the roof, and a plurality of girder members secured to each column and diagonally disposed with relation to the joists, said joists

being cut into sections and secured between the diagonally disposed girder members.

2. A structure of the character described a plurality of spaced columns positioned on the longitudinal center line of a roof, a plurality of girder members secured on the upper end of each column and disposed on an angle of substantially 45° with relation to the longitudinal center line of the roof, a plurality of joist members secured between the girders and disposed parallel to the longitudinal center line of the roof, and a roof covering secured to the joists.

3. A structure of the character described a plurality of spaced columns positioned on the longitudinal center line of a roof, a plurality of girder members secured on the upper end of each column and disposed on an angle of substantially 45° with relation to the longitudinal center line of the roof, a plurality of joist members secured between the girders and disposed parallel to the longitudinal center line of the roof, and a roof covering secured to the joists, all of said members being welded with relation to each other to form an integral structure.

NOBLE E. DAWSON.

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