2 Sheets--Sheet 1.

E. WATSON.

Metallic Roof.

No. 165,771. Patented July 20, 1875.

Fig. 1.

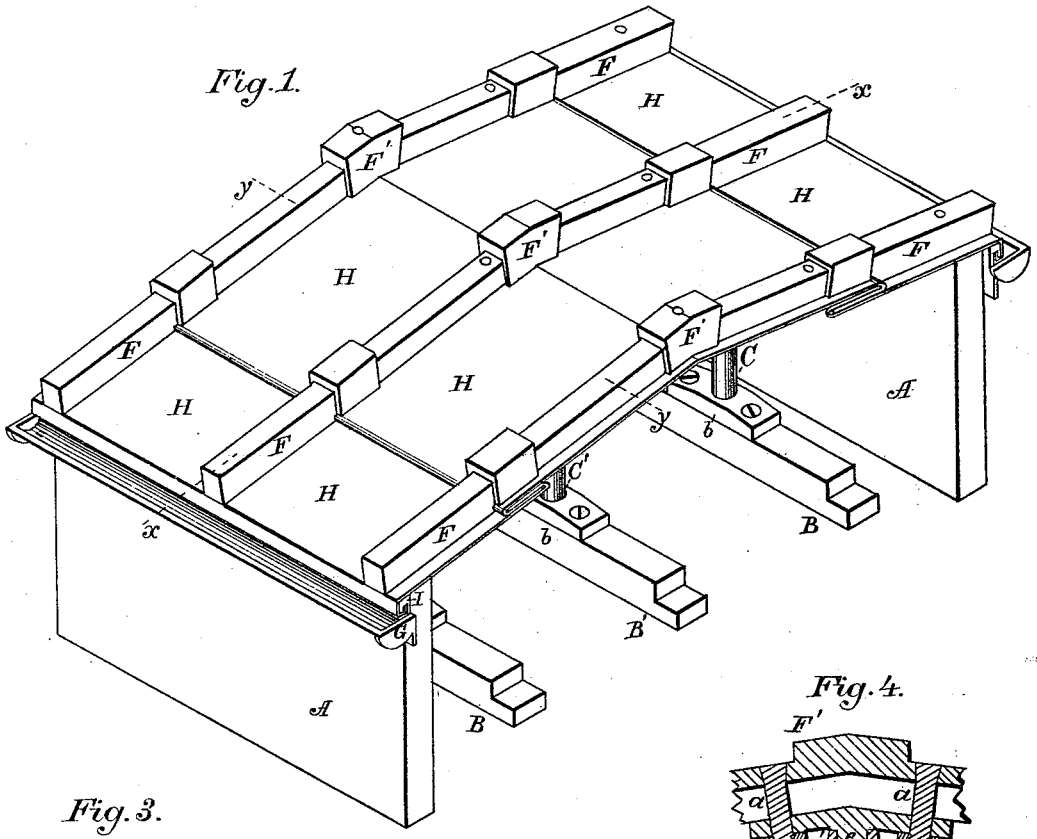


Fig. 4.

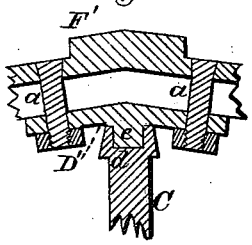


Fig. 3.

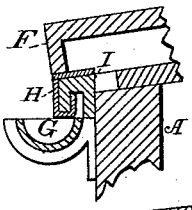
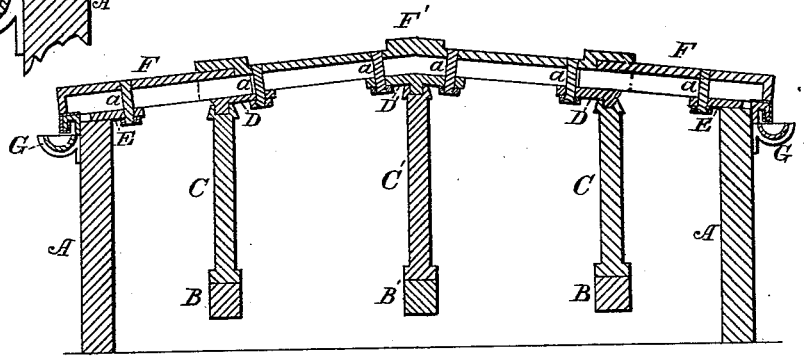


Fig. 2.



Witnesses:
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F. H. Schott.

Inventor:
Elisphalet Watson

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Fig. 5.

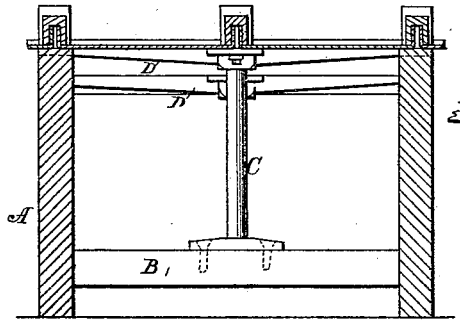


Fig. 6.

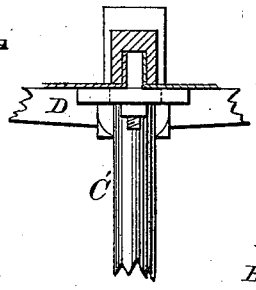


Fig. 7.

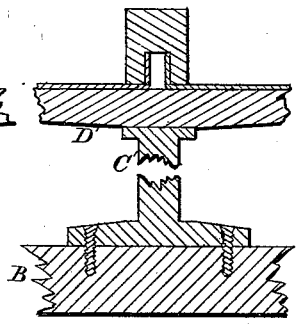


Fig. 8.

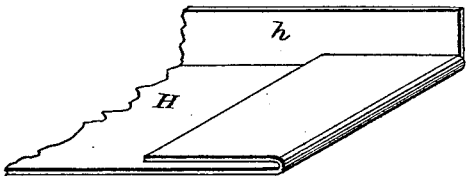


Fig. 9.

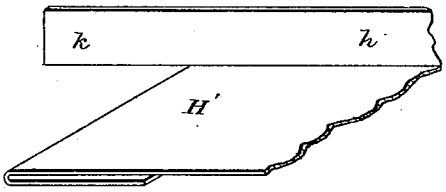
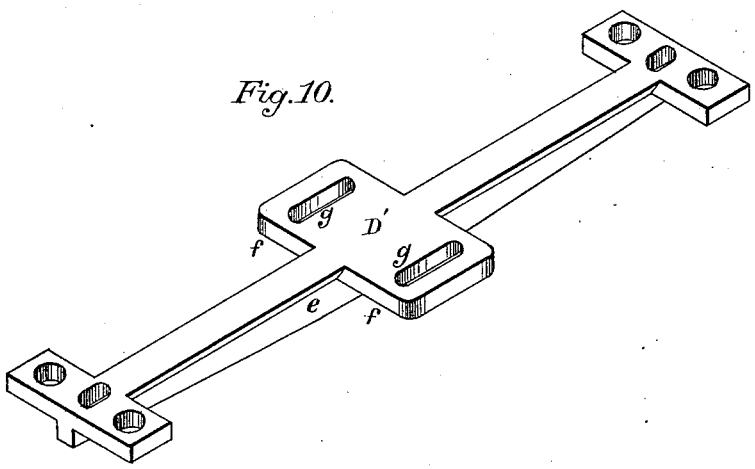


Fig. 10.



Witnesses:
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F. M. Schott.

Inventor:
Eliphalet Watson

UNITED STATES PATENT OFFICE.

ELIPHALET WATSON, OF NORTHWOOD CENTRE, NEW HAMPSHIRE.

IMPROVEMENT IN METALLIC ROOFS.

Specification forming part of Letters Patent No. 165,771, dated July 20, 1875; application filed April 17, 1875.

To all whom it may concern:

Be it known that I, ELIPHALET WATSON, of Northwood Centre, in the county of Rockingham and State of New Hampshire, have invented certain new and useful Improvements in the Construction of Roofs; and I do hereby declare that the following is such a full, clear, and exact description thereof as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings and to the figures and letters of reference marked thereon, similar letters indicating corresponding parts in the different figures.

This invention relates to that class of metallic roofs, of large span, commonly used upon railway-depots, or other buildings of great width, the object being to construct a roof which shall possess great strength and rigidity, and allow of the use of large plates of metal in its covering, obviating all danger of their cracking from expansion or contraction, as well as affording an easy means of removal when it is desired to replace one sheet by another without disturbing the remainder of the roof; and the invention consists in the construction and arrangement of the different parts, as will be hereinafter fully described, and then pointed out in the claims.

Figure 1 is a perspective view of a portion of a roof with its supports. Fig. 2 is a vertical section upon the line *x x* of Fig. 1. Fig. 3 presents an enlarged sectional view, showing the method of attaching the gutters. Fig. 4 shows an enlarged section of a portion of a supporting-post and the bearer and covering-plates at the apex of the roof. Fig. 5 is a longitudinal section on the lines *y y* of Fig. 1, showing the method of covering the joinings of the roofing-plates. Fig. 6 is an enlarged sectional view, showing the relative positions of the bearers and covering-plates. Fig 7 presents a sectional view through one of the supporting-parts and the bearers and covering-plates at the apex of the roof. Figs. 8 and 9 are perspective views, showing the lap-joint of the roofing-plates, and Fig. 10 is a perspective view of one of the bearers, showing the provisions for adjustment as well as for expansion and contraction.

In the accompaning drawings, the letter A denotes the walls of a building, and B B′ a system of transverse beams or girders resting upon the walls, or upon other suitable supports. These girders serve the double purpose of ties to the building and supports to the posts C, which are retained in their proper position upon them by a base, *b*, which is securely bolted to the girders. The upper end of these posts is enlarged and formed with a recess or groove, *d*, in which rests the rib *e*, upon the under side of the bearers D and D′. These bearers, when intended for the support of the apex of the roof, are formed as shown in Fig. 10, being provided with the projections *f*, having therein the elongated orifices *g* upon both sides, but when used at any point between the apex and the eaves they are provided with the projections *f* only upon one side.

Resting upon the walls are the wall-pieces or plates E, which are provided with elongated orifices similar to those in the bearers D, the object in both cases being to provide for the expansion and contraction of the metal composing the roof.

An outer piece, I, having a deep groove formed in its lower face, into which the lower ends of the covering-plates H are turned, is secured to the wall in such a manner that the groove shall be outside of its face, thus preventing water from running back under the eaves, and forcing it to fall directly into the gutters G, which are attached to the wall just beneath the eaves.

The covering-plates H are large, and have both edges turned up, as shown in Fig. 5, which renders the whole plate vertically rigid, and enables it to carry a great weight of snow or other matter without sagging. The plates are joined to each other at their ends by means of a lap-joint, formed as shown in Figs. 8 and 9, in which H represents the upper end of one of the plates, the turned-up flange *h* being removed for a short distance, and the end of the plates turned over, as shown in Fig. 8. The lower end of the plate H′ has the flange *h* remaining intact, and presenting a lip, *k*, which covers the joint of the flanges, a slit being made at the angle between the flange and the plate for the length of the lap. It is

then turned down, as shown in Fig. 9, and, being hooked over the upper end of the plate H, forms an expansion-joint, which is impervious to water, and yet allows any necessary movement in the different plates with which the roof is covered.

Covering the joint formed by the juxtaposition of the flanges of the roofing-plates are the U-shaped covering-pieces F and F′. Those lettered F′ are placed over the apex of the roof, and descend so far upon each side as to connect with the two bearers D adjoining, and are secured to the flanges *f* of these bearers by the bolts *a*, the heads of which enter a countersunk orifice in the pieces F′, and pass downward between the flanges of the covering-plates, through the elongated orifices *g* in the bearers, and upon the under side of which is the nut of the bolt *a*, which, when screwed up, retains the parts in their proper relative positions. The lower ends of these pieces F′ are sufficiently enlarged to receive the upper ends of the pieces F, which cover the flanges, until the wall or next lower line of bearers is reached, according to the width of the building to be covered.

Among other advantages secured by this method of constructing roofs are its perfect adaptability to buildings of different sizes, and the ease with which additions may be made to it in case it is desired to enlarge the orifice it is designed to cover; and, further, it may always be manufactured and sold without being especially prepared for the building it is to cover. It may, therefore, take the place of timber or slate roofs, in case of their destruction by fire or other means, without delay or any especial preparation of the building therefor.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent of the United States, the following:

1. The supporting-posts C, having the elongated base, and enlarged cap with the recess *d* for the reception of the rib *e* of the bearers D, as specified.

2. The bearers D, provided with the ribs *e* and projections *f*, the latter being perforated by the elongated orifices *g*, as and for the purposes set forth.

3. The wall-pieces I, provided with the deep groove, as described, in combination with the covering-plates H and gutters G, as and for the purpose set forth.

4. The supporting-plates E resting upon the wall A, in combination with the roofing-plates H and the covering-pieces F, as set forth.

5. The combination of the beams B with the supports C, bearers D, roofing-plates H H′, and covering-pieces F and F, all being constructed and arranged as and for the purpose specified.

In testimony that I claim the foregoing as my own, I hereunto affix my signature in presence of two witnesses.

ELIPHALET WATSON.

Witnesses:
JOSIAH CARPENTER,
GEORGIA B. CARPENTER.