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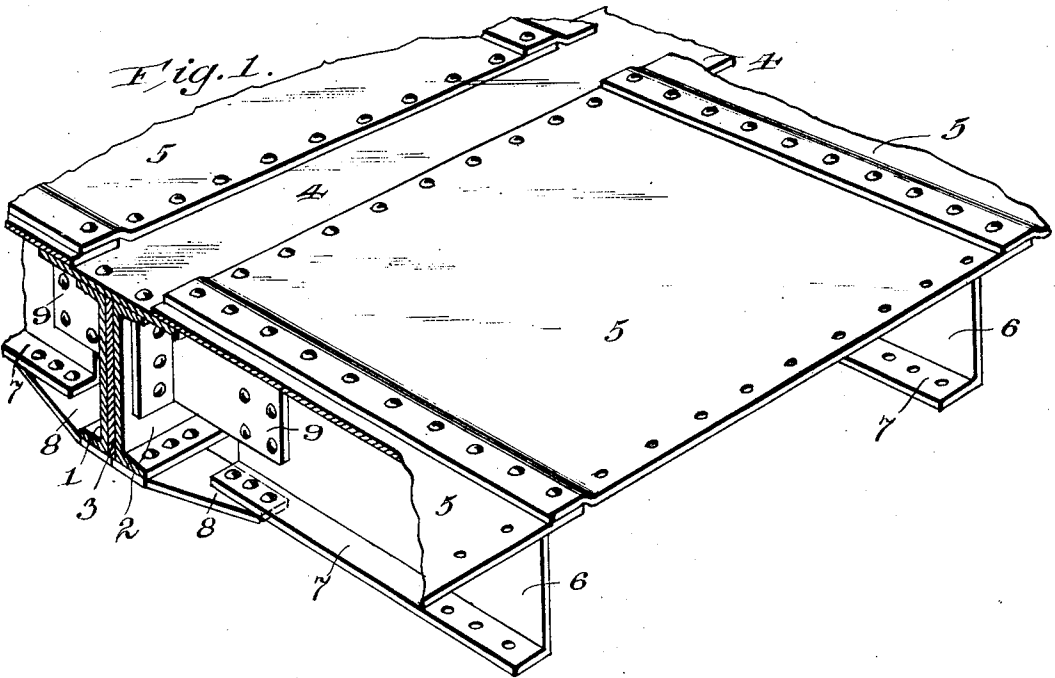
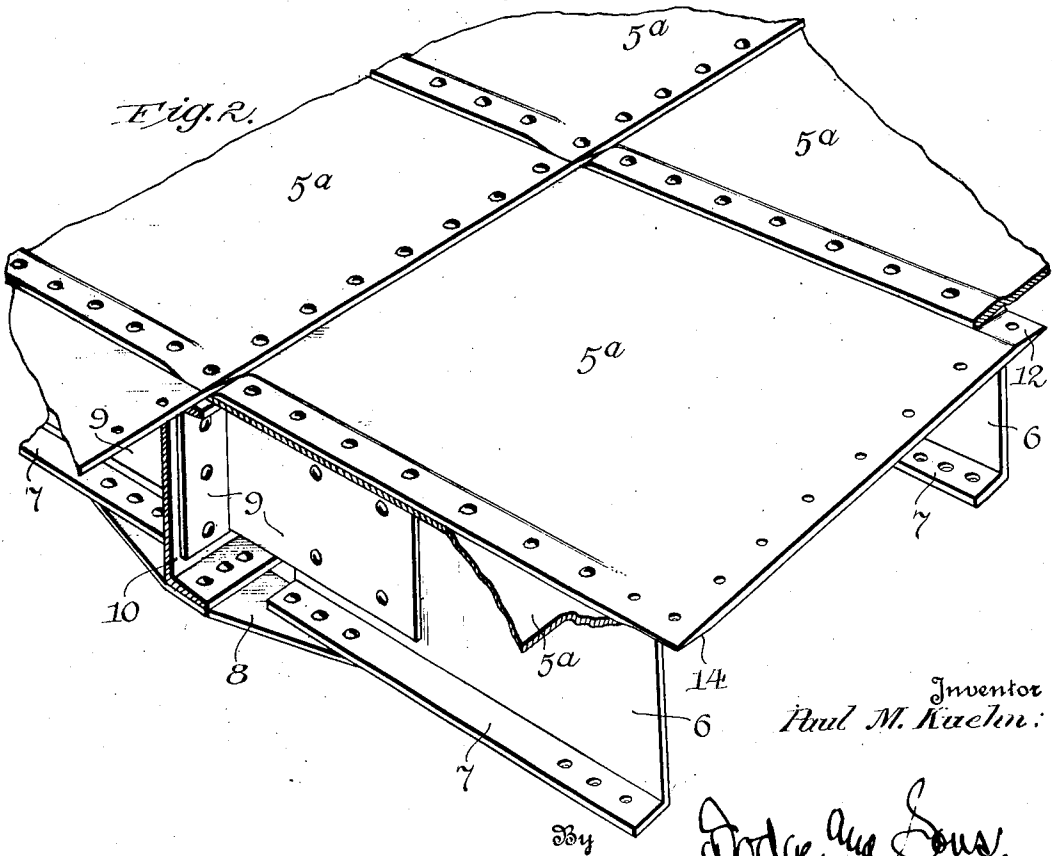
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METALLIC ROOF

Filed March 18, 1926

2 Sheets-Sheet 1



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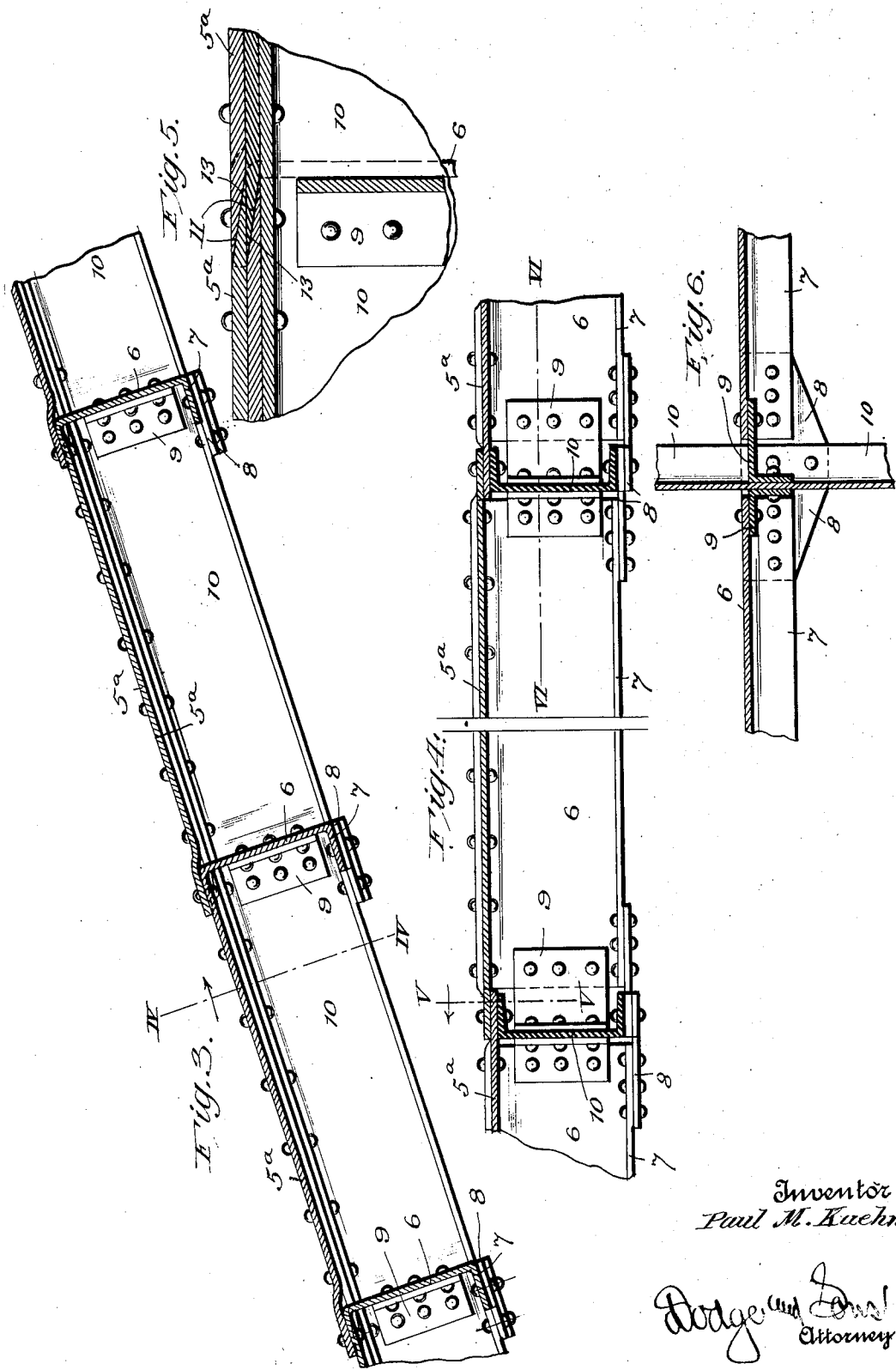
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UNITED STATES PATENT OFFICE

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METALLIC ROOF

Application filed March 18, 1926. Serial No. 95,773.

This invention pertains to metallic roofs and the main object is to produce a roof structure wherein the roofing plates are so shaped as to produce purlins integral with the plates.

A further object is to so fabricate the combined plates and purlins that they may be readily assembled and secured to the main trusses or beams whether the latter has the general form of an I section or a channel section.

With these and other objects and advantages in view, reference will be had to the annexed drawings wherein

Figure 1 is a perspective view of a section of a roof wherein the main trusses are of I form, and the plates on opposite sides of each main truss rest each directly on the top plate of the truss and do not overlap each other,

Figure 2 is a perspective view of a slightly modified form from that shown in Figure 1 wherein the plate is scarfed at its corners to facilitate and permit overlapping with reference to other plates when the main truss or beam has a channel cross section.

Figure 3 is a longitudinal sectional view of a roof wherein the latter construction is employed,

Figure 4 is a transverse sectional view on the line IV—IV of Figure 3,

Figure 5 is an enlarged detail sectional view on the line V—V of Figure 4 illustrating the overlap of the corners of contiguous plates, and

Figure 6 is a detail section on the line VI—VI of Figure 4.

Referring first to the construction shown in Figure 1 it will be seen that the main beam or truss (only one being illustrated) has the form of an I beam fabricated from two channel bars 1 and 2 and an intermediate plate 3, present to stiffen the structure. The latter may, however, be omitted where weight is not essential or required.

Overlying and extending longitudinally of the truss or beam is a plate 4 forming in effect the top chord of the truss said plate being riveted to the underlying flanges of the channels 1 and 2.

The combined roofing plates and purlins are produced from single plates cut to the proper outline and bent to form. They comprise that plate section proper, denoted by 5 and a purlin comprising the downwardly turned section 6 and the inwardly projecting flange 7. The downturned section 6, 7 is of a width slightly less than the width of the plate, the plate being cut away at its corners at one end of the plate prior to the bending operation. By thus making the purlin shorter than the width of the plate the latter may have its edges brought into proper overlapping relation with the plate 4 or the top chord of the main beam or truss which the plate 4 forms. The roof plates 5 are laid and riveted in overlapping relation to each other and are likewise riveted to the top chord. It will be observed, however, that the plates on opposite sides of the main beam do not overlap each other but each rests directly on the top plate of the main beam.

To stiffen and tie the structure together, gusset plates 8 are secured to the ends of the flanges 7 and the adjacent lower chord of the beam.

Angle shear plates 9 are likewise secured to the end portions of the body of the purlin and the central portion or chord of the truss or main beam.

As will be seen, plates 5 where they overlap the adjacent edge of another plate will be bent upwardly to such an extent as to ensure a fair bearing and contact between the parts. Inasmuch as the roof will, under ordinary usage, lie at an angle the slight rise in the lower edge of each plate will be immaterial in so far as proper drainage is concerned.

In some cases a form of main beam or girder will be used which has no element analogous to the plate 4 which, as illustrated in Figure 1, presents a lateral extension or flange on each side of the beam. A channel beam used as the main beam or girder would offer the commonest case where this condition is presented. Where it is presented the two series of roof plates extending in opposite directions from the main beam must overlap above the beam so that they can be riveted to-

gether and to the single flange presented at the upper edge of the channel.

To reduce the thickness of the joint where four plates would overlap each other, under the construction just mentioned, and to secure a tight joint it is advisable to scarf the corners of the plates and this modified construction is illustrated in Figures 2 to 6 inclusive. So far as the use of integral purlins is concerned this modified arrangement involves no material change from the structure shown in Figure 1 but to make clear the possibility of this construction within the scope of my invention it is illustrated in detail.

Under this arrangement the plates not only overlap at their ends but also at their edges and as a consequence the corners of the plates are scarfed to facilitate the placement of the plates and the securing of the same in position.

With the construction illustrated, single channel beams 10 are employed as the main beams or trusses and the roofing plates and purlins are of the same form except that the former, denoted by 5*, see more particularly Figure 2, are scarfed to take care of the overlap where the corners of four plates come together.

As will be noted in Figure 2, (see also Figure 5) the upper face of the plate, at what may be termed its upper end or from that end from which the purlin extends, is scarfed at its corners as indicated by 11 and 12. The other corners, at the lower edge of the plate are scarfed on the under side of the plate as at 13 and 14.

In laying the plates the edges are overlapped and secured upon the main beams 10, see Figure 4, and the ends of the plates likewise overlap the next adjoining plate at which point they are riveted.

Gusset plates 8 and shear or angle braces 9 are present as in the arrangement first described.

What is claimed is:

1. In a metallic roof construction, the combination of main beams; a series of roofing plates resting upon and secured thereto, each plate at one end having a purlin formed integral therewith, said purlins being of a length less than that of the body of the plate and extending inwardly between the beams; and means for securing the purlins to the main beams.

2. In a metallic roof construction, the combination of main beams; a series of roofing plates secured thereto, each plate having a flanged purlin formed integral therewith at one end; and means for securing the purlins and their flanges to the main beam.

3. In a metallic roof construction the combination of main beams and a series of roofing plates each of said plates having a purlin formed integral therewith at one end and

each of said plates likewise having its corners scarfed to admit of overlapping of the plates at their corners.

4. In a metallic roof construction, the combination of a main beam and a series of roofing plates which overlap above the main beam, said plates having purlins formed integrally therewith at one edge, which edge is transverse to the main beam, the opposite edge being offset to overlap the purlin-carrying edge of the adjacent plate and the plates being scarfed at the corner to reduce the thickness where four plates overlap; and means for connecting said purlins with said main beam.

5. In a metallic roof construction, the combination of a main beam and a series of roofing plates which overlap each other above said main beam, said plates having each a purlin consisting of a web and flange formed integrally with the plate along one edge thereof, which edge is transverse to the main beam, the opposite edge being offset to overlap the purlin-carrying edge of an adjacent plate, the corners of said plates being scarfed to reduce the thickness where four plates overlap each other; gusset plates connecting the flanges of said purlins with said main beam; and angle shear plates connecting the webs of said purlins with the main beam.

In testimony whereof I have signed my name to this specification.

PAUL M. KUEHN.