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R. R. BLOSS ET AL

METAL SHEETING

Filed March 26. 1926

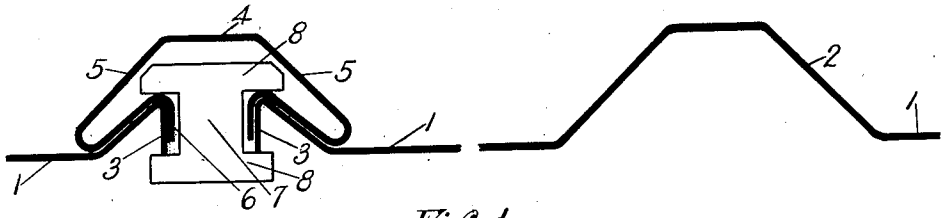


Fig. 1

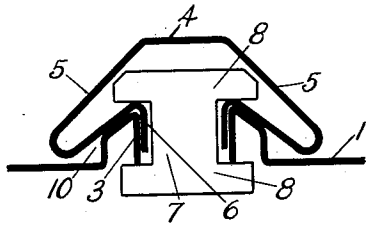


Fig. 2

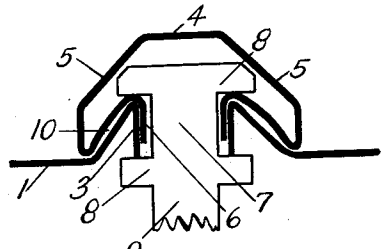


Fig. 3

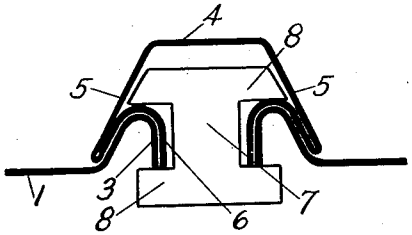


Fig. 4

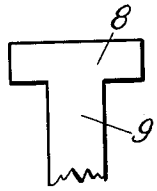


Fig. 5

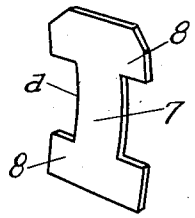


Fig. 6

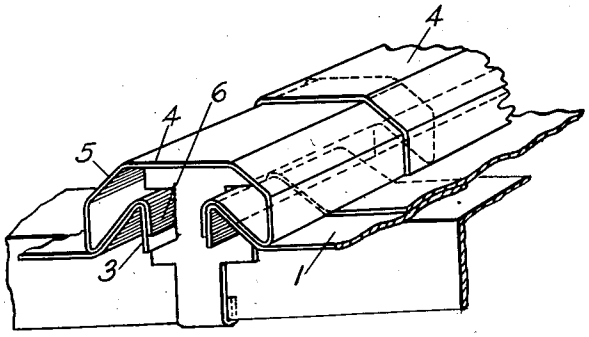


Fig. 7.

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UNITED STATES PATENT OFFICE.

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METAL SHEETING.

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Our invention relates to metal sheeting. It has to do with the provision of a novel form of sheeting and a novel method of and apparatus for the attachment of such sheeting to the framework of a building structure or other enclosure.

In the first place, we have provided a corrugated sheeting structure of such cross-sectional design that a roof or other surface formed therefrom will be capable of carrying a greater load per square-foot than ordinary corrugated roofing. Furthermore, our sheeting structure makes possible the nesting and lapping of the sheets with sufficient exactness to prevent leakage in a driving rain without the necessity of special flashing or closing devices at the end laps.

Our sheeting is of such structure that it may be attached at as many points as is desirable with a consequent assurance of security, while the attaching mechanism is of such a nature that the sheeting may be removed at any time, with expedition and without difficulty or injury to such sheeting. Furthermore, the construction of the edges of the sheeting and of the joining structure thereof will be such that the juncture of any two rolled sheets will be stronger than the corrugations between joints.

Our attaching mechanism is such as to avoid the use of nails or other fastening means to pierce the metal and is, also, of such nature that it can be caused to grip and even indent the sheet so as to obviate slippage of the fastening means and of the sheeting as well.

Our invention is illustrated in the accompanying drawings in which similar reference numerals designate similar parts and in which:

Figure 1 is an end elevation showing the manner of forming the joint between adjacent sheets.

Figure 2 is an end elevation showing a modified arrangement for preventing leakage by capillary attraction.

Figure 3 is a view similar to Figure 1 but showing the type of clamp employed for securing the sheeting to a backing and a modified method of preventing leakage by capillary attraction.

Figure 4 is an end elevation of a further modification wherein both the sheets and the cap strip are engaged by the securing clamp.

Figure 5 is a fragmentary view of a modified device for attaching the sheeting to a backing.

Figure 6 is a perspective view of the securing clamp shown in Figures 1, 2 and 4.

Figure 7 is a fragmentary perspective view showing the manner of overlapping the ends of the sheets and cap strips.

In Figure 1 is shown the preferred form of our invention. The sheets 1 may be of any desired size and shape but are, preferably, rectangular and provided with one or more ribs or corrugations 2 intermediate the sides. The opposite sides of the separate sheets are turned upwardly and then downwardly to define a structure angular in shape and having the depending portion 3. Adapted to cooperate with the suitably-spaced sides of adjacent sheets are provided cap strips 4 which are, preferably, formed with leg portions 5 and angular portions 6 which are adapted to fit the similarly-shaped sides of the sheets. The cap strip 4 may be of any desired cross-sectional shape and different shapes are shown in Figures 3 and 4.

To secure the assembled cap strip in position, and H-shaped clamp 7 is provided and, as clearly shown in Figure 1, the projecting portions 8 thereof engage with the tops of the angular portions 6 of the cap strip and with the depending portions 3 of adjacent sheets 1. This clamp 7 may be crimped or bent when in position so that the portions 8 thereof will indent the metal and tightly secure the sheets in position. The structure is such that the bending of the shank of the clamp to the proper extent will result in tightening it upon and thereby securing the adjacent edges of the sheeting.

This method of securing the sheets together obviates the necessity for punching holes and provides a rigid assembly which may be readily disassembled without difficulty or damage to the sheets. It will be noted that the depending portions 3 of the sheets 1 terminate in the same plane as the body of the sheets and, therefore, support part of the weight which would, otherwise, be supported by the intermediate parts of the sheets.

Some of the clamps may be provided with extensions 9 which may be secured in any desired manner to the supporting framework or backing for holding the assembled sheets

in proper position with relation thereto, if desired. A modified fastener, which is shown in Figure 5, may be employed for holding the sheeting to the framework as it is not essential that these fasteners be provided with more than two projections 8. For instance, the shank of the fasteners may be wrapped around one of the standards or cross pieces of the supporting framework or backing.

In the Figure 4 is shown a modified form of our invention wherein the portions 6 of the cap strip 4 extend down even with the portions 3 of the sheets and the clamps 7 engage both instead of only the portion 3 of the sheets, as shown in Figures 1, 2, 3 and 7. This extension of the portions 6 of the cap strip 4 imparts added strength to the joint.

In Figures 2 and 3, are shown constructions in which openings 10 are provided between the sheet and cap strip by suitably forming the material. The purpose of these openings is to prevent water from entering between the sheets by capillary attraction.

Figure 7 shows the manner of overlapping the ends of the sheets and cap strips. The sheets are merely overlapped and their edges nested. The cap strips are overlapped, the underneath portion of the upper and overlapping strip being cut away to avoid interference with the corresponding portion of the next lower cap strip. It is preferable to locate the lap in the cap strip so that it will not coincide with the lap in the sheets. A further method of overlapping the cap strips is to telescope the end of the lower strip into the adjacent end of the next upper strip, somewhat in the manner in which stovepipe is joined together.

From the description above, it will be clear that our invention provides a sheeting material which is well-adapted to all uses of metal sheeting and which, in addition, may be quickly applied with the aid of simple tools, such as a pair of pliers, to form a substantial structure which may be easily disassembled, if desired.

It will, furthermore, be apparent that we have provided a sheeting structure which can be manufactured from a sheet of irregular contour as, for instance, a trapezoidal form, without necessity for square shearing. For instance, if one edge of a sheet is out of parallelism with another edge of the sheet, the sheet may, nevertheless, be completely flanged, inasmuch as this will merely result in one of the edge flanges 6 extending down a greater length at one end than at the other end.

It will, likewise, be apparent that the fastener which we utilize can be quickly and readily inserted between the sheeting from the inside. This fastener may be crimped or curved to any desired extent and this, in itself, creates an adjustability between the lugs of the fastener or between such lugs and the framework of the building and thereby allows the fastener to accommodate itself to variations in the joint corrugations of the sheeting and the joint covering.

It has already been pointed out that the fastener may be crimped to such an extent that it will form indentations in the extending legs of the corrugations with which it contacts so as to prevent displacement of the fastener in relation to the sheet and of the sheets in relation to each other. Such displacements might be occasioned by vibrations under wind load or by slippage due to inherent weight of the sheeting, as when this sheeting is in vertical position. Furthermore, the fasteners are well-adapted to be located at overlapping joints to further ensure against leakage of wind or water. It may be desirable to initially crimp the fasteners to facilitate subsequent crimping after insertion in the sheeting structure.

Another point of considerable importance is that the sheeting structure is of such a form that it may be made from hot dipped galvanized sheeting without injury to the galvanized surfaces. It is well-known that these galvanized sheetings have a tendency to crack or scale off when bent around too small a radius. In addition, it will be noted that these joints of our structure which are bent at the most acute angle are protected from the weather, thus causing an additional safeguard against the elements.

Having thus described our invention, what we claim is:

1. A fastening means for the adjacent edges of sheeting comprising a shank and laterally extending wings, said shank being of such structure that when bent the fastening means will tighten upon and secure the sheeting.

2. A fastening means for the adjacent edges of sheeting comprising a flat shank with wings extending therefrom in the same plane with such shank, said shank being of such structure that it can be bent to secure the sheeting.

3. A fastening means for the adjacent edges of sheeting comprising a shank and spaced pairs of wings carried by said shank, said shank being of such structure that when bent the fastening means will tighten upon and secure the sheeting.

4. A fastening means for the adjacent edges of sheeting comprising a shank and spaced pairs of wings carried by said shank in the same plane with said shank, said shank being of such structure that it can be bent to secure the sheeting.

5. A fastening means for the adjacent edges of sheeting comprising a flat bendable shank, and spaced pairs of wings carried by said shank in the same plane with said

shank, said shank being of such structure that when bent the fastening means will tighten upon and secure the sheeting.

6. A fastening means for adjacent edges of sheeting comprising a cap strip, and a clamp including a shank and laterally extending wings, said shank being of such structure that when bent the fastening means will tighten upon and secure said cap strip and sheeting together.

7. A fastening means for adjacent edges of sheeting comprising a cap strip, and a clamp including a shank and laterally extending wings, said shank being of such structure that when bent the fastening means will tighten upon and secure said cap strip and sheeting together, and having portions securable to the frame work upon which the sheeting is mounted.

8. A clamp for fastening the adjacent edges of panels comprising a shank and a comparatively enlarged portion carried by said shank, said shank being of such construction that when bent the clamp will tighten upon the panels and render the clamp effective.

9. A fastening means for the adjacent edges of panels comprising a clamp including a shank and laterally extending wings, said shank being of such a structure that when bent the fastening means will tighten upon and secure the panels.

In testimony whereof we hereby affix our signatures.

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