July 5, 1927. 1,635,147

R. R. BLOSS ET AL

METAL SHEETING

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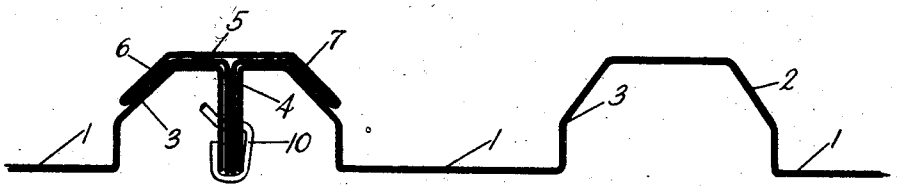


Fig. 1

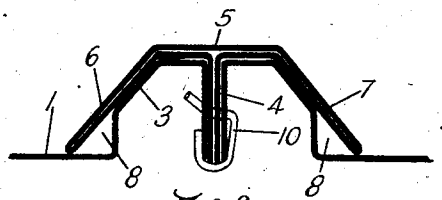


Fig. 2

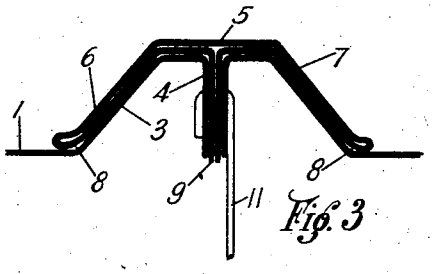


Fig. 3

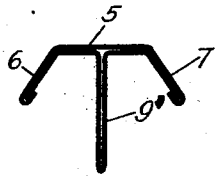


Fig. 4

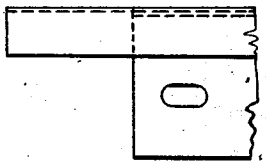


Fig. 5

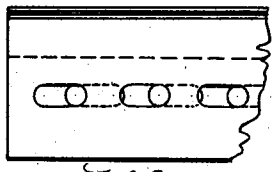


Fig. 6

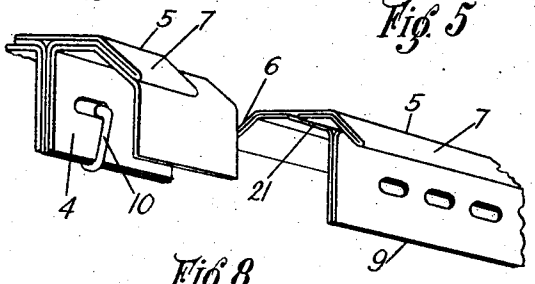


Fig. 8

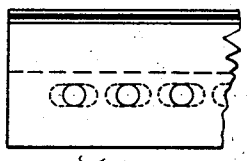


Fig. 7

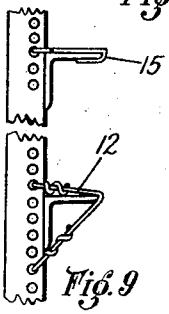


Fig. 9

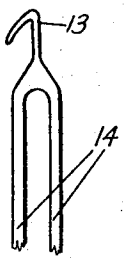


Fig. 10

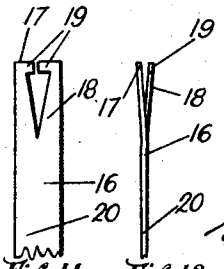


Fig. 11

Fig. 12

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UNITED STATES PATENT OFFICE.

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METAL SHEETING.

Application filed April 5, 1926. Serial No. 99,691.

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 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 can 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.

Furthermore, we have provided a fastening means which obviates the necessity of bolts and nuts and which can be caused to grip and hold the sheeting structure in position with a minimum expenditure of labor. In addition, our fastening means may be of such nature that it can be caused to secure the sheeting structure to the building structure merely by lapping a portion of the fastening means around a portion of the building structure.

Our invention is illustrated in the accompanying drawings wherein similar reference numerals designate corresponding parts in the several figures and wherein:

Figure 1 is an end elevation showing one method of assembling and securing the sheets and cap pieces together.

Figure 2 is an end elevation showing a modified cap piece and its relation to the sheets to prevent leakage of water by capillary attraction between the contacting metallic surfaces.

Figure 3 is an end elevation of a further modified design and showing one manner of attaching the assembled sheets to a backing.

Figure 4 is an end elevation of a modified cap piece.

Figure 5 is a side elevation showing how the cap piece is cut for overlapping with the next adjacent cap strip.

Figures 6 and 7 are views showing the rows of registering holes or openings in the sheet and cap strip.

Figure 8 is a perspective view showing the manner in which the cap pieces are overlapped.

Figures 9, 10 and 11 are views showing different methods and devices for attaching the assembled sheets to a backing and

Figure 12 is a side elevation of the device shown in Figure 11.

In the drawings, it will be seen that our invention comprises the sheets 1 which are, preferably, formed with longitudinal corrugations 2 intermediate their opposite sides. The sheets 1 may, of course, be of any desired size but a rectangular shape is preferred. The sheets 1 may be bent upwardly and then downwardly, as shown in the figures, to form the substantially angular portions 3 and the depending portions 4 which are adapted for a purpose hereafter described. The edge portions of the sheets may be bent into a great many shapes and two are illustrated in Figures 1 and 3 but without any intention of limiting the invention thereto.

Adapted to interfit between the spaced edges of the separate sheets are provided the cap pieces 5 which are, generally, T-shaped members of metal formed in one piece, as shown in Figures 1, 2, 3 and 8, or, in two connected pieces, as shown in Figure 4. The legs 6 and 7 of these cap pieces extend, pref-

erably, far enough toward the sheets 1 to prevent leakage of water and, if desired, a space 8, such as is shown in Figures 2 and 3 may be formed by suitably designing the sheet edges and legs of the cap pieces. The purpose of this space is to break the capillary paths between the metallic surfaces and, so, prevent leakage of water. The portions 4 and web 9′, preferably, terminate in the common plane of the connected sheets to assist in supporting the load upon the sheet surfaces.

The portions 4 of the sheets 1 are provided with rows of elongated (Figure 6) or circular (Figure 7) openings and the webs 9 of the cap pieces are provided with similar openings so that some fastening means may be inserted through registering openings in the three members. The holes in the portions 4 of the sheets 1 and the holes in the web 9 of the cap piece 5 are, preferably, so arranged and of such size that registering openings can always be found and the sheeting and cap pieces be assembled without difficulty. For holding the sheets and cap pieces together, pieces of wire 10 bent, somewhat, in the manner illustrated in Figures 1 and 2, are preferred and some of these may be provided with extensions 11 which may be bent around parts of the backing, as shown at 12 in Figure 9, to securely hold the assembled sheeting in proper position.

Figure 10 illustrates a modified device for use in place of the wire 11 heretofore described. This consists of a hook 13 which may be hooked into the openings in the sheets 1 and web 9 of the cap piece, and the extensions 14, which may be wrapped around any convenient part of the backing, all as illustrated at 15 in Figure 9.

Figures 11 and 12 show different views of a further modified device which may be used in place of those heretofore described for holding the sheets in proper position with reference to the building framework or other backing. This device comprises the bifurcated portion 16 and its legs 17 and 18 are oppositely sprung so that it may be straddled over the portions 4 of the sheets on opposite sides of the web 9 and twisted until the teeth 19 engage in holes, when the extensions 20 may be secured to some part of the backing.

When necessary, the separate sheets may be placed end-to-end and overlapped by cutting away a part of the web 9, as shown at 21 in Figure 8. This cutting away of the web makes possible overlapping of the leg portions 6 and 7 to secure a water and weather-tight joint. A surface of any size may be covered by securing together the sides of the spaced parallel sheets and overlapping the end-to-end sheets in the manner just described.

It will thus be obvious that this invention provides a practical method of securing sheets together and of securing the assembled sheets to the framework of a portable building or other structure and that the resulting assembly is positive and substantial, although readily disassembled without damaging, when necessary.

It will, furthermore, be apparent that we have provided a sheeting structure which may be manufactured from a sheet of irregular contour as, for instance, a trapezoidal form, without necessity for square sheeting. 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 4 extending down a greater length at one end than at the other end.

For instance, if the sheets are trapezoidal in form, one method of punching and forming each sheet may be as follows:

First, the gauges in the punching machine are set up, and one row of holes is punched along one side of the sheet, gauging the sheet from a given edge, which edge would be the one most nearly square with either one of the two ends. The row of holes along the opposite edge of the sheet would then be punched, gauging the sheet in the machine from the same edge as was used in punching the first row of holes. If desired, the gauges of the machine could be so arranged and set up that the second row of holes would be punched with reference to the first row of holes. In other words, the gauges would be constructed so that they would engage with the holes in the first row. Either one of these methods would insure that the second row of holes would be parallel to the first row of holes irrespective of the edges of the sheet. The sheet is then passed onto the forming dies. In placing sheet in the forming dies, it would be held by a gauge which would engage with the punched holes, insuring that the corrugations of the sheet would be made in true and proper relation to the row of holes, irrespective of the edges of the sheet.

Another point of considerable importance is that the sheeting structure is of such a form that it can 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.

Furthermore, it will be noted that we have provided a means whereby a piece of flexible wire can be converted into a fastening device merely by the insertion through aper-

tures in the sheeting and cap structures and by bending of the wire to such a form that it prevents slippage of these parts with relation to each other and with relation to the building structure. Thus, no application of nuts to threads is necessary and the use of slots instead of holes renders the application of this fastening device extremely simple, although the use of enlarged holes would accomplish substantially the same result and, furthermore, is within the spirit of our invention.

Having thus described our invention, what we claim is:

1. A sheeting comprising spaced parallel sheets having perforated depending edge flanges, a cap piece having a web adapted to fit between said flanges and having openings adapted to register in a variety of positions with the openings in said sheet edge flanges.

2. A sheeting comprising sheets having spaced depending edge portions and cap pieces secured between said edge portions by depending web members said depending side portions and said web members terminating in substantially the common planes of said sheets.

3. A sheeting comprising spaced parallel sheets having their adjacent edges turned upwardly and then downwardly, caps positioned between said downturned portions and having parts overlapping said upturned portions and means for securing said caps and sheets together, said means having extending portions designed to be wrapped around a backing.

4. A sheeting comprising spaced parallel sheets having perforated depending edge flanges, cap pieces adapted to be secured between said sheets and having holes adapted to register with the perforations in said edge flanges and means for securing said cap pieces and sheets together, said means having an extending portion for wrapping around a backing.

In testimony whereof we hereby affix our signatures.

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HARRY R. ANSEL.