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(54) FIXING SYSTEM FOR ROOFING

- (71) We, DIETHELM AND COMPANY LIMITED, of 139/149, Market Street, Singapore, a company incorporated under the laws of Switzerland, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—
- The invention relates to a method and apparatus for securing a roofing or building sheet to a structural members such as a purlin or sheeting rail.
- In use, a roofing or building sheet will be subjected to wide ranges of temperatures which will cause expansion and contraction of the sheet. Conventional securing systems employing hook bolts for example tend to act against movement of the sheet due to thermal expansion and contraction; this is undesirable because buckling of the sheet may result. The present invention is concerned with a securing system which not only allows such movement of the roofing or building sheet but also maintains a firm securement between the sheet and the structural member in a manner which will prevent the occurrence of leaks.
- According to one aspect of the invention there is provided a method of securing a roofing or building sheet to a structural member such as a purlin or sheeting rail comprising securing a bendable strap intermediate its ends to the underside of the sheet, bending the strap around the member and bringing its end towards each other, passing the strap ends through a connecting member, bending each protruding end of the strap back upon itself and securing the strap ends by folding part of the connecting member back upon itself to overlies the free ends of the strap.
- According to a further aspect of the invention there is provided apparatus for securing a roofing or building sheet to a structural member such as a purlin or sheeting rail, said apparatus comprising a bendable strap for securement at a point intermediate its ends to the underside of the sheet, said strap being of such a length that it is able to be bent completely round the member, and a connecting member through which said strap ends may be passed and secured by bending each protruding end of the strap back upon itself, said connecting member being provided with tabs which may be bent to overlies the free ends of the strap.
- The invention will be more readily understood from the following description, given by way of example only, reference being made to the accompanying drawings in which:—
- Figure 1 is a perspective view showing a roofing or building sheet together with certain components of securing apparatus according to the invention prior to assembly, those components comprising a bendable retaining strap and means for securing the strap to the sheet;
- Figure 2 is a perspective underneath view showing the strap secured to the sheet;
- Figure 3 is a perspective view showing the sheet with the strap secured thereto bent against opposite sides of a structural member such as a purlin or sheeting rail, and a connecting member for securing the strap ends;
- Figures 4—7 are perspective views showing the various stages in securing the strap ends to the connecting member, and
- Figure 8 is a cross sectional view showing the roofing or building sheet when secured to the purlin or sheeting rail.
- Referring to Figures 1 and 2, a roofing or building sheet 1 preferably of aluminium and having corrugations 2 of trapezoidal cross-section (only one corrugation being shown) has a hole 3 in the upper face 4 of a corrugation. A bendable retaining strip 5 also preferably of aluminium is apertured at 6 midway between its ends and is secured to the sheet 1 by a bolt 7 and nut 8 which are preferably of aluminium, the bolt passing through the hole 3 in the sheet 1 and the aperture 6 in the strap 5. A neoprene washer 9 is provided between the head of the bolt 7 and the sheet 1, the neoprene washer fitting into a recess in the bolt head.

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Figure 3 shows the assembly of Figure 2 positioned in conjunction with a structural member 10 such as a purlin or sheeting rail which may, for example, be an extruded section and is preferably of aluminium. The strap 5 is bent downwardly on opposite sides of the structural member so as to lie against the opposite sides thereof and to bring the free ends 11 and 12 of the strap below the structural member. A connecting member in the form of a washer 13 which constitutes a further component of the securing system is located beneath the structural member as shown; the washer is preferably of aluminium. The washer 13 has a pair of parallel bendable tabs 14, 15 extending in opposite directions and a hole 16 through which the free ends 11 and 12 of the strap are passed as seen in Figure 4.

The ends 11 and 12 of the strap are bent so as to lie flat against the underside of the washer and the tabs 14 and 15 are then bent so as to underlie the ends of the strap as shown progressively in Figures 4 to 6. Finally, the ends 11 and 12 of the strap are bent to underlie the tabs 14 and 15 as progressively shown in Figures 6 and 7. By this means, the roofing or building sheet 1 is secured to the top of the structural member 10 by the strap 5 as seen in Figure 8. If desired, a strip of plastics material, such as polyvinyl chloride, may be interposed between the strap 5 and the structural member 10. The use of such a strip is desirable if the metal of the structural member differs from that of the strap so as to prevent electrolytic corrosion.

It is immaterial to the invention whether the free ends of the strap are secured by passing them, for example, through an apertured connecting member of plate-like form, such as the washer 13, or by passing them through other forms of connecting member such as a member of somewhat tubular configuration the free ends of the strap being threaded through the connecting member from the same end.

The roofing or building sheet may have corrugations having a trapezium shape different to the particular trapezium shape shown in the drawings, or may have corrugations which are sinuous in shape.

WHAT WE CLAIM IS:—

1. A method of securing a roofing or building sheet to a structural member such as a purlin or sheeting rail comprising securing a bendable strap intermediate its ends to the underside of the sheet, bending the strap around the member and bringing its ends towards each other, passing the strap ends through a connecting member, bending each protruding end of the strap back upon itself and securing the strap ends by folding part of the connecting member back upon itself to overlie the free ends of the strap.

2. A method according to claim 1, wherein the connecting member is of plate-like form having an aperture therein through which the strap ends are passed.

3. Apparatus for securing a roofing or building sheet to a structural member such as a purlin or sheeting rail, said apparatus comprising a bendable strap for securement at a point intermediate its ends to the underside of the sheet, said strap being of such a length that it is able to be bent completely round the member, and a connecting member through which said strap ends may be passed and secured by bending each protruding end of the strap back upon itself, said connecting member being provided with tabs which may be bent to overlie the free ends of the strap.

4. Apparatus according to claim 3 wherein the strap and connecting member are made of aluminium.

5. A method for securing a roofing or building sheet to a structural member such as a purlin or sheeting rail, substantially as herein described with reference to Figures 4 to 7 of the accompanying drawings.

6. Apparatus for securing a roofing or a building sheet to a structural member such as a purlin or sheeting rail, substantially as herein before described with reference to Figures 1, 2, 3 and 8 of the accompanying drawings.

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Figure 3 shows the assembly of Figure 2 positioned in conjunction with a structural member 10 such as a purlin or sheeting rail which may, for example, be an extruded section and is preferably of aluminium. The strap 5 is bent downwardly on opposite sides of the structural member so as to lie against the opposite sides thereof and to bring the free ends 11 and 12 of the strap below the structural member. A connecting member in the form of a washer 13 which constitutes a further component of the securing system is located beneath the structural member as shown; the washer 13 is preferably of aluminium. The washer 13 has a pair of parallel bendable tabs 14, 15 extending in opposite directions and a hole 16 through which the free ends 11 and 12 of the strap are passed as seen in Figure 4.

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WHAT WE CLAIM IS:—

1. A method of securing a roofing or building sheet to a structural member such as a purlin or sheeting rail comprising securing a bendable strap intermediate its ends to the underside of the sheet, bending the strap around the member and bringing its ends towards each other, passing the strap ends through a connecting member, bending each protruding end of the strap back upon itself and securing the strap ends by folding part of the connecting member back upon itself to overlie the free ends of the strap.

2. A method according to claim 1, wherein the connecting member is of plate-like form having an aperture therein through which the strap ends are passed.

3. Apparatus for securing a roofing or building sheet to a structural member such as a purlin or sheeting rail, said apparatus comprising a bendable strap for securement at a point intermediate its ends to the underside of the sheet, said strap being of such a length that it is able to be bent completely round the member, and a connecting member through which said strap ends may be passed and secured by bending each protruding end of the strap back upon itself, said connecting member being provided with tabs which may be bent to overlie the free ends of the strap.

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