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(54) Fastening strips for roof sheeting

(57) Roof construction in buildings comprise securing corrugated roof sheeting 3 to a roof frame structure 1 fastening strips e.g. corrugated 4 are first secured to purlins 2 of the structure 1 and then securing the sheeting 3 to crowns of the strips 4. The sheeting 3 is in overlapping sections 3a.

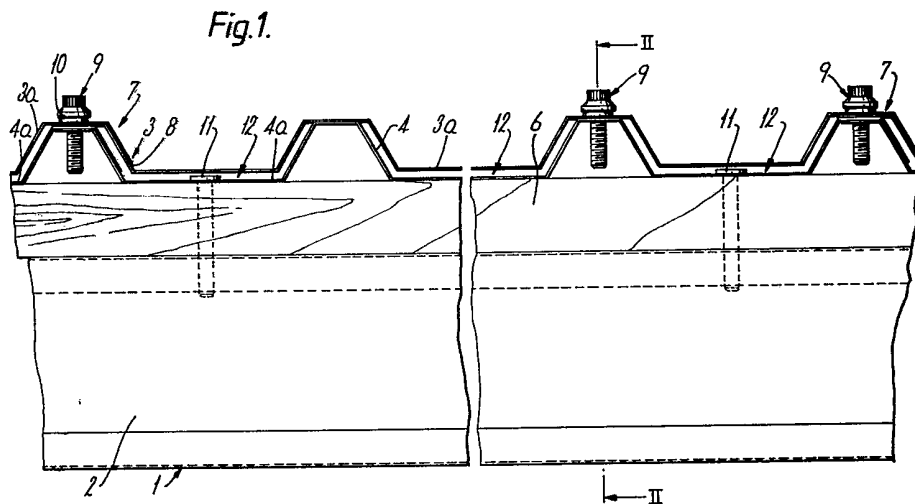


Fig. 1.

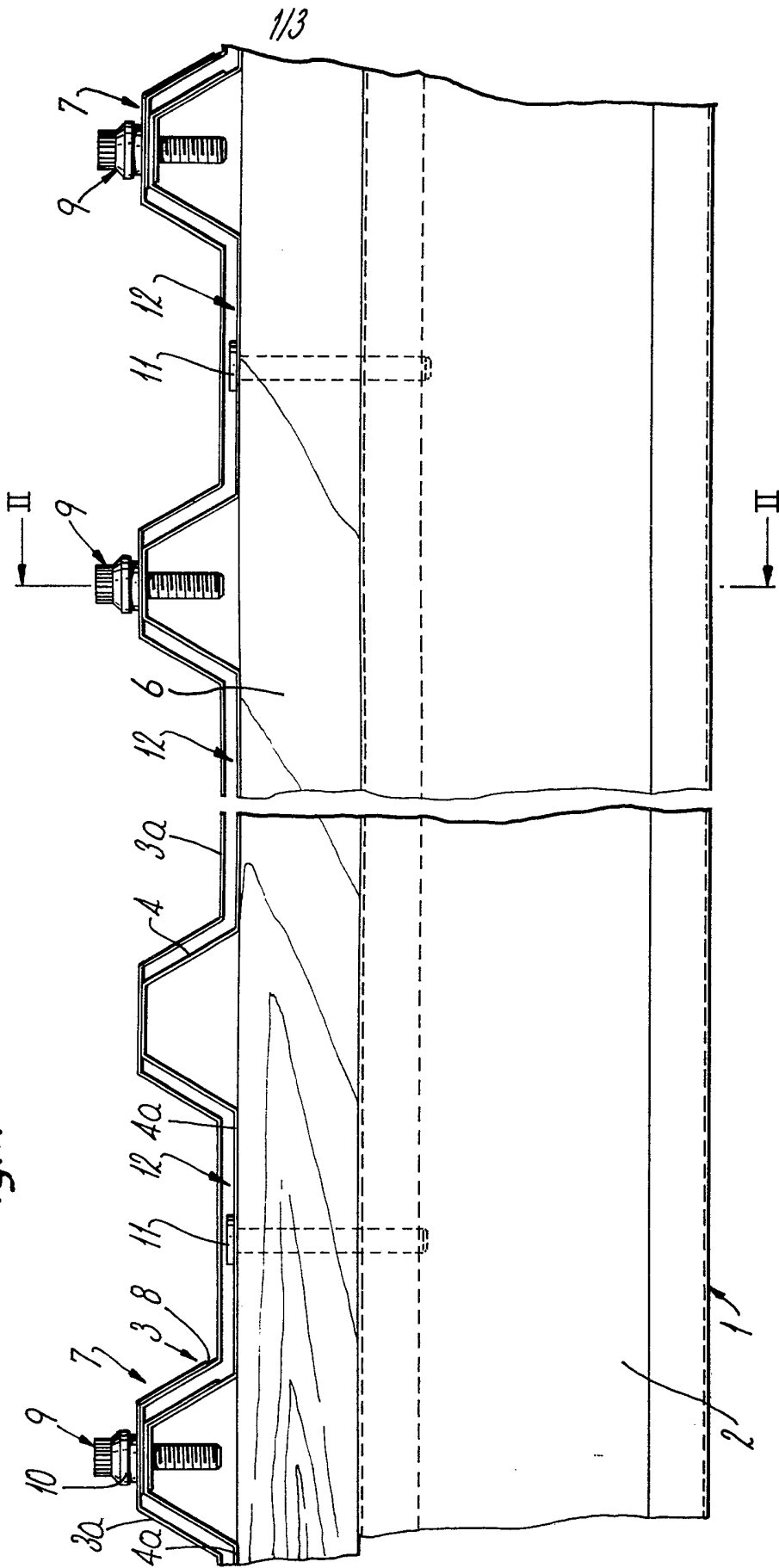
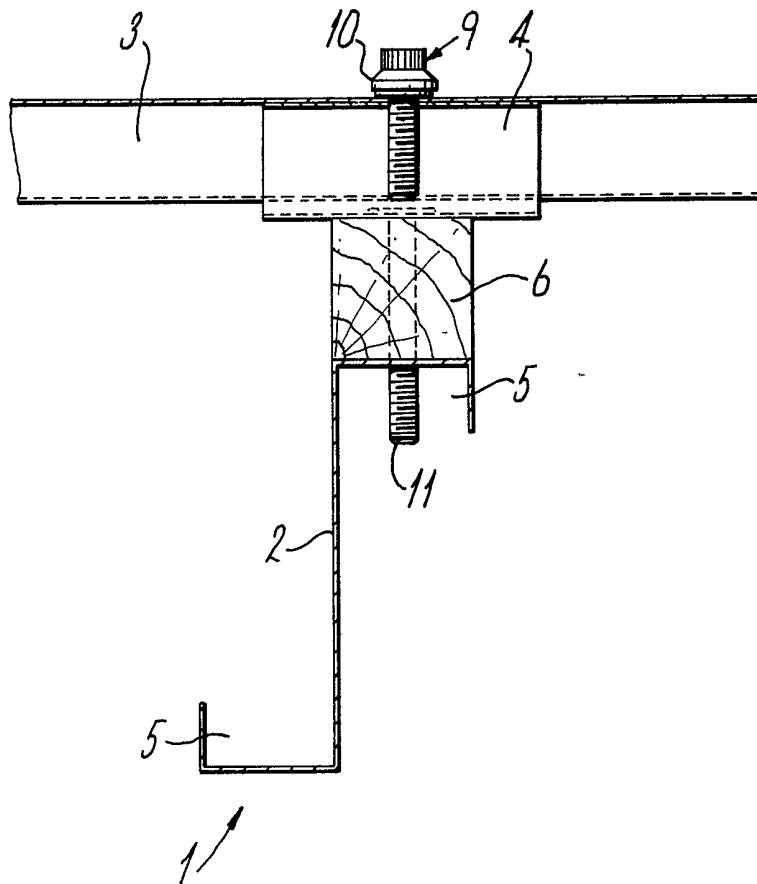


Fig.2.



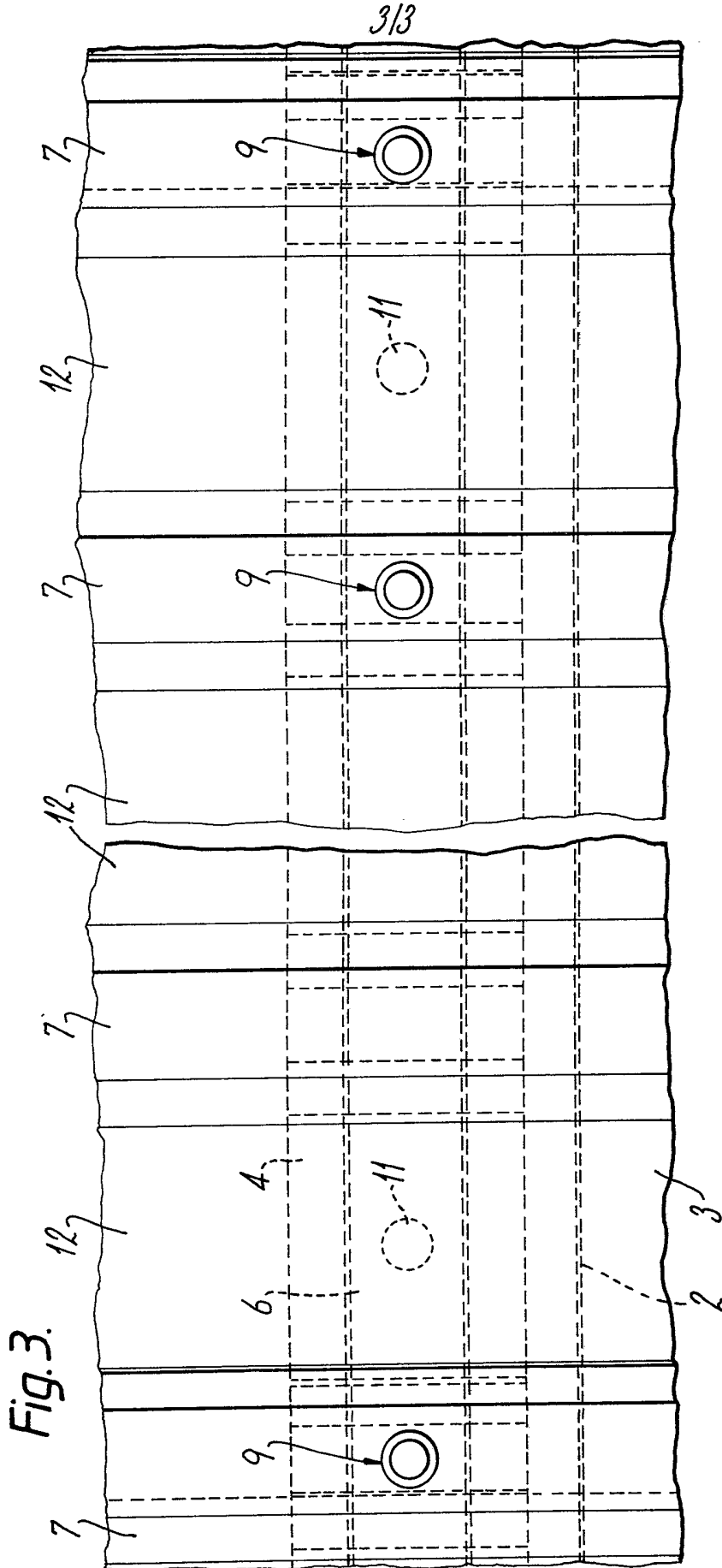


Fig. 3.

## SPECIFICATION

**Improvements in or relating to roof constructions in buildings**

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The present invention relates to roof constructions in buildings.

In the construction of roofs in buildings, roof sheeting or cladding is fixed to the roof frame structure, for example at the roof purlins, and it is of course necessary for the fixtures to be adequately tightened to ensure that the sheeting is firmly fixed. It is common to use roof sheeting or cladding of corrugated form with the sheeting secured to the roof purlins at the valleys of the corrugations by means of screws.

A disadvantage of this construction is that there is a considerable likelihood of internal seepage of water via the holes for the screws, and this problem can be particularly severe where a concavity or ringing has been formed around a screw hole due, for example to excessive tightening of the screw. It is not practical with previous constructions to secure the corrugated sheeting by screws located at the crowns of the sheeting and extending to penetrate a purlin, since the crown is spaced from the purlin (or appropriate fixing beam) and tightening of the screw with such an arrangement would inevitably cause concavity formation around the screw hole in the sheeting so that seepage problems would again be present.

It is an object of the present invention to obviate or mitigate these problems.

According to the present invention, there is provided a fastening strip for use in securing roof sheeting or cladding to a roof frame structure, said strip being adapted for fastening to the roof frame structure and serving additionally to hold the roof sheeting.

Preferably, said fastening strip is of corrugated form, the strip being adapted to be secured to the roof frame structure at the strip valleys while the roof sheeting is attached to crown parts of the strip.

The corrugated strip is preferably used with corrugated form roof sheeting, the pitch of the strip corrugations being equivalent to that of the sheeting corrugation, while the depth of the strip corrugations is greater than the depth of the sheeting corrugations. The corrugations are preferably of trapezoidal form to facilitate fastening.

The strip will be of a suitably rigid and robust construction, and can be made of metal (e.g. mild steel) or alternatively of plastics material.

The present invention is also a roof construction comprising roof sheeting secured to a roof frame structure by means of the above fastening strips. The fastening strips are preferably attached to purlins of the roof frame structure, and in a preferred embodiment these purlins comprise S-form metal channels with thermal insulating elements between the channels and the fastening strips.

An embodiment of the present invention will now be described, by way of example, with reference to the

accompanying drawings, in which:—

Fig. 1 shows a side view of a portion of a roof construction, embodying the present invention;  
Fig. 2 shows a view through section II-II in Fig. 1; and

Fig. 3 shows a plan view of the construction of Fig. 1. Referring to the drawings, a roof construction comprises a roof frame structure 1 including purlins 2 and roof sheeting or cladding 3 secured to the purlins 2 by means of a series of fastening strips 4. The purlins 2 are in the form of an S-section mild steel channel 5 (see Fig. 2) with a square section wooden beam 6 located between the channels 5 and the fastening strips 4 and serving as a thermal break.

The roof sheeting or cladding 3 is made up of a number of suitably sized and overlapping sheet sections 3a. Each section 3a is of corrugated form with a corrugation profile of trapezoidal shape to facilitate securing of the sheeting and also drainage of rainwater. As can be seen in Fig. 1, the sheet sections have substantial overlap at their crowns 7, with the external entry 8 of any interface gap of the sheeting facing downwardly to mitigate against entry of rainwater. The sheeting sections 3a are secured to the corresponding crown parts of the fastening strips 4 which are also of corrugated form with a profile substantially complementary to that of the sheeting 3. The strips 4 can conveniently comprise sections 4 which overlap similarly as the sheeting sections 3a. The strips 4 have the same corrugation pitch as the sheeting 3 but have a greater depth of corrugation so that the sheeting 3 is only supported by the strips 4 at the crowns 7. The sheeting 3 is secured to the strips 4 by suitable fasteners 9 after appropriate holes are cut in the strips and sheeting, and the gap between the crown 7 and the beam 6 considerably facilitates this securement so that the sheeting 3 can be very securely fixed in position. The fasteners 9 can be fitted at selective crowns and especially at the crowns where there is overlapping of the strip and sheeting sections, and the fasteners 9 preferably have fairly substantial heads 10 to mitigate against deforming of the sheeting.

The strips 4 are firmly secured to the purlins 2 by means of fasteners, e.g. screws 11 fitted at selected valleys 12 of the strips 4. As can be seen, the valleys of the corrugated sheeting and strips are considerably wider than the crowns and this facilitates both fitment and support of the roof cladding through the roof frame structure (i.e. the purlins) and also the drainage of water from the roof sheeting. The sheeting and the fastening strips can be made of metal, e.g. mild steel, but alternatively these could be made of other suitably rigid material, e.g. plastics.

The use of the fastening strips 4 enables the sheeting 3 to be fully secured at the crowns which is in contrast to previous roof constructions where the sheeting was directly secured to the roof frame structure by screws at the sheeting valleys. The presence of external screws in the valleys gave rise to the distinct possibility of water ingress at the screw holes in the valleys. The present arrangement avoids this problem and provides a very considerably im-

proved weathering seal performance over previous roof constructions. The likelihood of water seepage via the fasteners 9 is very minimal. Additionally, the construction enables the sheeting 3 to be very firmly secured, so that the possibility of subsequent movement of the sheeting which could cause ringing or recessing of the fixture holes or loosening of the fixtures is eliminated or greatly reduced. The faster strips 4 can be relatively narrow and consequently can be relatively economic to manufacture.

Modifications are of course possible. For example, the purlins 2 may take the form of plain wooden beams rather than the S-section channels, and the sheeting may be attached to some other part of the roof frame structure than the purlins, e.g. at the roof rafters. The sheeting and the fastening strips could have different profiles; and it is preferable that a variety of strips are produced with different profiles to cater for a variety of roof sheeting sections. The strips may or may not have pre-formed holes for fitment of the fixtures 9, 11. Wooden thermal breaks 6 of different depth may be used.

#### CLAIMS

1. A fastening strip for use in securing roof sheeting or cladding to a roof frame structure, said strip being adapted for fastening to the roof frame structure and serving additionally to hold the roof sheeting.
2. A fastening strip as claimed in Claim 1, wherein the strip is of corrugated form, the strip being adapted to be secured to the roof frame structure at the strip valleys while the roof sheeting is attached to crown parts of the strip.
3. A fastening strip as claimed in Claim 2, wherein the strip is used with corrugated form roof sheeting, the pitch of the strip corrugations being equivalent to that of the sheeting corrugation, while the depth of the strip corrugations is greater than the depth of the sheeting corrugations.
4. A fastening strip as claimed in Claim 2 or 3, wherein the corrugations are preferably of trapezoidal form to facilitate fastening.
5. A fastening strip as claimed in Claim 1, 2, 3 or 4, wherein the strip is of suitably rigid and robust construction.
6. A roof construction comprising sheeting secured to a roof frame structure by means of the above fastening strips.
7. A roof construction as claimed in Claim 6, wherein the fastening strips are attached to purlins of the roof frame structure.
8. A roof construction as claimed in Claim 7, wherein the purlins comprise S-form metal channels with thermal insulating elements between the channels and the fastening strips.
9. A roof construction as claimed in Claim 8, wherein the thermal insulating elements are of wood.
10. A fastening strip substantially as hereinbefore described with reference to the accompanying drawings.
11. A roof construction substantially as hereinbefore described with reference to the accompanying drawings.