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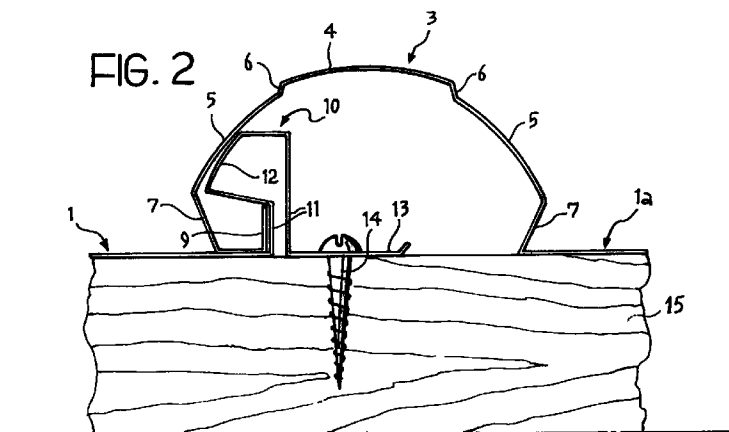
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(54) **A profiled sheet-metal roofing element for buildings**

(57) A profiled sheet-metal roofing element (1) for buildings comprises, on one of the end edges, a first, substantially inverted U-shaped rib (3) with an internal vertical flange (9). In the vicinity of the other end edge which is to be fixed to the support structure (15), the sheet-metal element (1) has a second rib (10) having a shank (11) and a head (12) forming an engagement

tooth under which the vertical flange (9) of the first rib (3) of an adjacent sheet-metal element (1a) engages. The first rib (3) has an upper, substantially arcuate portion (4, 5, 6) and a lower portion comprising two flat sides (7) which are inclined to the vertical so as to converge downwardly.



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Description

The present invention relates to a profiled sheet-metal roofing element for buildings.

A profiled sheet-metal roofing element for buildings known from Italian utility model No. 209011 has:

- a first, inverted U-shaped transverse rib which extends on one of the end edges, the outer edge of the rib being bent inwardly to form a vertical flange,
- a second transverse rib which is situated adjacent the other end edge and is not as high as the first rib, the second rib comprising a vertical shank and a head in the form of an inwardly-facing retaining tooth, the portion of sheet metal disposed between the second rib and the edge of the sheet-metal element being intended to house means for fixing to the support structure of the roofing, the fixing means being covered, in conditions of use, by the first rib of the adjacent element which engages the second rib forming a fixed joint with its vertical flange disposed under the projection of the retaining tooth.

In the profiled sheet-metal element according to the utility model cited above, the first inverted U-shaped rib has, in cross-section, two inclined sides which diverge downwardly from its upper surface.

This shape involves the risk that, in the event of substantial vertical loads being applied to the roofing (for example, due to a large depth of snow or to its being trodden on) this rib tends to open out until its vertical flange is disengaged from the retaining tooth of the adjacent sheet-metal element, thus prejudicing the stability of the roofing.

In order to prevent this problem, the subject of the present invention is a profiled sheet-metal element of the type specified above, the main characteristic of which lies in that fact that the first, inverted U-shaped rib has, in cross-section, an upper, substantially arcuate portion and a lower portion comprising two flat sides inclined to the vertical so as to converge downwardly.

Because of this shape, vertical loads applied to the rib tend to close the rib up (rather than opening it out), clamping its vertical flange more tightly against the lower surface of the retaining tooth of the adjacent sheet-metal element.

Further characteristics of the invention will become clear from the following description given with reference to the appended drawings, provided purely by way of non-limiting example, in which:

Figure 1 is a side view of a profiled sheet-metal roofing element for buildings according to the present invention, and

Figure 2 shows a joint between two elements of the

type shown in Figure 1, on an enlarged scale and in longitudinal section.

A profiled sheet-metal roofing element for buildings, having quadrangular ribs 2 disposed at intervals, is indicated 1.

The element 1 has, at one end, a transverse rib 3 having, in section, a substantially inverted U-shaped profile with an upper substantially arcuate portion.

This upper portion has a convex top portion 4 and two side walls 5 also having convex profiles and connected to the top portion 4 by two short substantially vertical portions 6.

Two flat side walls 7 extending downwardly from the lower ends of the convex side walls 5 are inclined to the vertical so as to converge downwardly. The inclination of the walls 7 to a vertical plane may be, for example, of the order of 15°.

At the base of the inclined wall 7 which is situated on the outer side of the element 1, the rib 3 has a portion 8 which is bent horizontally towards the interior of the rib 3 and an end flange 9 which is bent vertically.

In the vicinity of its opposite end to the rib 3, the sheet-metal element 1 has an engagement rib 10 which is not as high as the rib 3.

The engagement rib 10 comprises a shank constituted by two vertical portions 11 and an enlarged head 12 facing the interior of the element 1 to form a retaining tooth.

The sheet-metal element 1 has an end portion 13 which extends beyond the engagement rib 9.

As shown in Figure 2, the end portion 13 of the sheet-metal element 1 is fixed by means of screws 14 or equivalent fixing means, to the purlins 15 on which the roofing bears.

The hollow rib 3 of an adjacent sheet-metal element is then engaged on the engagement rib 10 of the element 1 so as to engage its vertical flange 9 against the lower surface of the engagement tooth 12.

The joint thus formed between two successive sheet-metal elements involves no risk of disengagement, even under the effect of large vertical loads applied to the roofing.

In fact, by virtue of the downward convergence of its lower side walls 7, the rib 3 tends to close up under the effect of such loads, so that the lower surface of the retaining tooth 12 of the rib 10 fixed to the battens supporting the roofing is clamped more tightly.

The curved profile of the upper portion of the rib 3 ensures better distribution of vertical loads applied and the central portion 4 connected to the two curved side portions 5 by the short vertical portions 6 achieves a guiding effect in the profiling of the sheet-metal element, as well as constituting a stiffening.

Claims

1. A profiled sheet-metal roofing element for buildings

comprising:

- a first, inverted U-shaped transverse rib which extends on one of the end edges, the outer edge of the rib being bent inwardly to form a vertical flange, 5
- a second transverse rib which is situated adjacent the other end edge and is not as high as the first rib, the second rib comprising a vertical shank and a head in the form of an inwardly-facing retaining tooth, the portion of sheet metal disposed between the second rib and the edge of the sheet-metal element being intended to house means for fixing to the support structure of the roofing, the fixing means being covered, in conditions of use, by the first rib of the adjacent element which engages the second rib forming a fixed joint with its vertical flange disposed under the projection of the retaining tooth, 10
characterized in that the first, inverted U-shaped rib (3) has, in cross-section, an upper substantially arcuate portion (4, 5, 6) and a lower portion comprising two flat sides (7) inclined to the vertical so as to converge downwardly. 15 20 25

2. A sheet-metal element according to Claim 1, characterized in that the two flat sides (7) are inclined at an angle of the order of 15° to the vertical. 30
3. A sheet-metal element according to Claim 1, characterized in that the upper portion of the first rib (3) comprises a convex top portion (4) and two convex side walls (5) connected to the top portion (4) by means of two short substantially vertical portions (6). 35

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FIG. 1

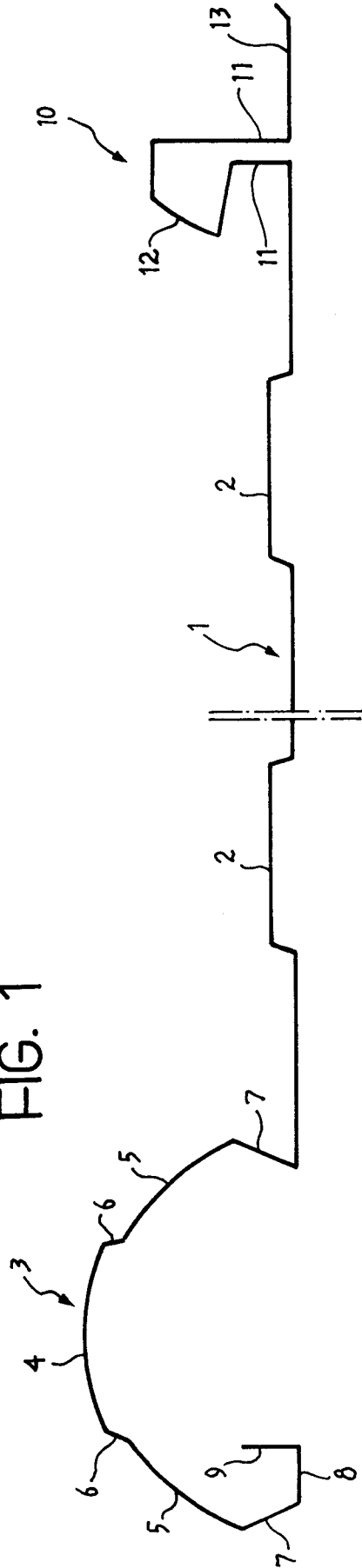


FIG. 2

