United States Patent

[11] **3,629,988**

[72] Inventor **Jan Hendricus Zylstra**
Auckland, New Zealand

[21] Appl. No. **11,801**
[22] Filed **Feb. 16, 1970**
[45] Patented **Dec. 28, 1971**
[73] Assignee **Alex Harvey Industries Limited**
Auckland, New Zealand
[32] Priority **Mar. 31, 1969**
[33] **New Zealand**
[31] **155963**

[54] **ROOFING TILES**
6 Claims, 2 Drawing Figs.

[52] **U.S. Cl.** **52/537,** 52/521, 52/534, 52/542
[51] **Int. Cl.** **E04d 3/362**
[50] **Field of Search** 52/521, 535, 537, 538, 542, 555, 556, 558, 553

[56] **References Cited**

UNITED STATES PATENTS

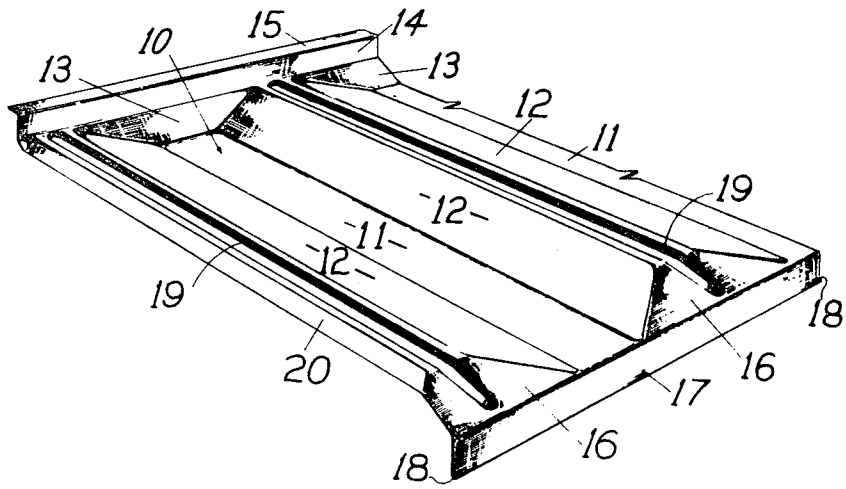
885,663	4/1908	Bruzaud	52/538
1,125,414	1/1915	Vogan	52/534 X
1,648,081	11/1927	Tyra	52/521
3,220,150	11/1965	Besse	52/537

FOREIGN PATENTS

874,256	4/1942	France	52/533
1,362,855	4/1964	France	52/550

Primary Examiner—Alfred C. Perham
Attorney—Young & Thompson

ABSTRACT: A roofing panel having a pattern of well-defined fluting extending across it with an upturned one edge and a downturned opposite edge extending across ends of the flutings characterized in that at least at one end of the pattern has bevelled or sloping areas.



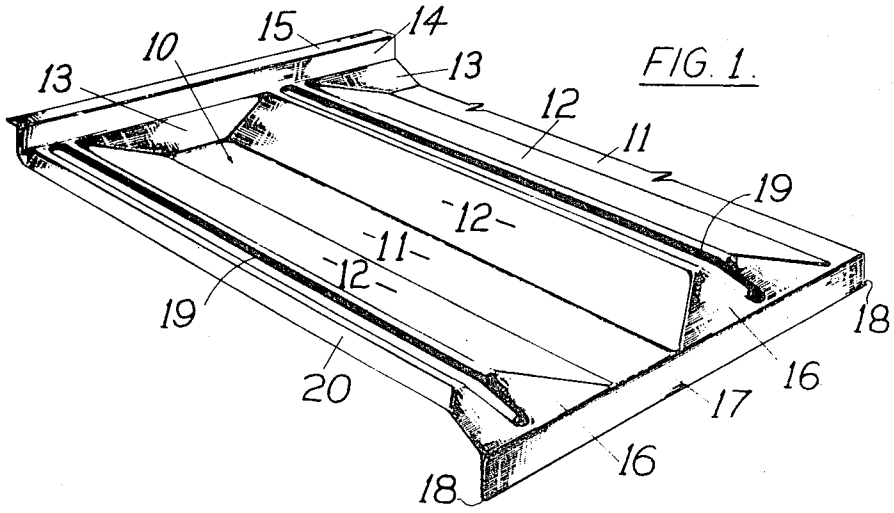


FIG. 1.

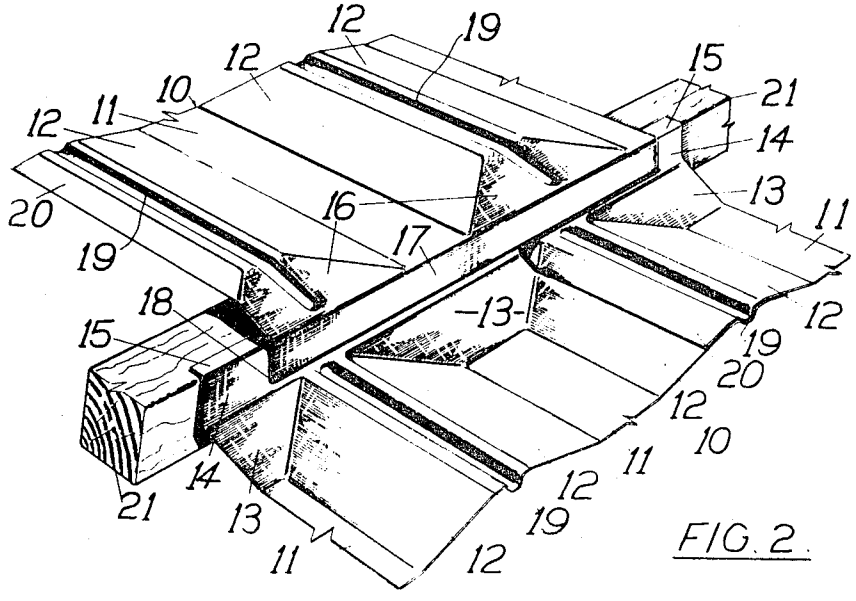


FIG. 2.

INVENTOR
JAN HENDRIKUS ZYLSTRA
BY Young & Thompson
ATTORNEYS

ROOFING TILES

This invention relates to improvements in tiles intended for use as roofing.

It is now well known to provide roofing tiles or press-formed panels comprising a sheet metal core coated at least on its constituted exterior upper side with materials contributing not only to its durability against adverse climatic conditions but also resulting in a very light weight panel. Such a panel is of a steplike form and of desirable length and has a neat pattern with a number, such as five or 10, of relatively deep well-defined flutings extending across its width which flutings and right-angle folds will contribute to the rigidity of the panel and as well as effecting optimum water-shedding conditions.

Such a press-formed metal roofing panel in its formation includes areas at the ends of the flutings which are disposed at right angles to a common base area of valleys of the flutings it has been experienced that during the forming process a high degree of elongation of the metal resulting in distortion and buckling and metal failure. This particularly noticeable in the regions of the raised patterns or hills of the flutings.

It is the object of the present invention to provide a roofing panel having such a construction or formation that results in little or no degree of elongation during the forming process to practically eliminate buckling and distortion in the regions where it would otherwise have occurred in the panel.

Accordingly the invention consists of a roofing panel having a pattern of well-defined flutings extending across it with an upturned one edge and a downturned opposite edge extending across ends of the flutings characterized in that at least at one end of the pattern bevelled or sloping areas are provided.

In further describing the invention, reference will be made hereinafter to the accompanying drawing in which:

FIG. 1 is a perspective view of part of the roofing panel and

FIG. 2 is a perspective view showing parts of three adjacent panels mounted on a wooden beam.

In giving effect to the invention, as a preferred embodiment, a sheet metal core of the panel can be one of suitable gauge material and of a conventional size. The pattern of flutings is one embodying several water-shedding channels **10**.

Each channel is formed of a base **11**, angled sides **12** and sloping area of end **13**. This sloping area of the end **13** connects with that of the sloping side **12** and extends away from the respective area of the base **11** and connects with a vertical upturned edge **14** that in turn connects with a horizontal fold **15** with a straight fold line giving the panel a conventional steplike form.

At the other end of respective sides **12** of adjacent channels **10** there is a further sloping end **16** arranged as a bevelled area extending downwardly from the hill or crown between such channels, so that each sloping end **16** takes forms of a triangularlike shape. The base of each such end **16** is defined by a vertical fold **17** along the edge of the panel, as a straight line with a downturned flange of the panel.

Planes of the downturned fold **17**, the bevelled ends **16** and the base of each channel **10** intersect in a straight line, thus preventing a sine-wave type of buckling of the downturned flange or fold **17** in the regions of the raised patterns.

The bottom edge **18** of this fold **17** is given a radius which provides for a barrier during coating process of the panel. When wet bitumen and aggregrate is applied to the panel the radiused edge **18** forms a barrier to prevent slip of the aggregrate.

Along the top or crown of each raised pattern is a groove **19**

that extends from the upturn edge **14** to about the base of the front sloping or bevelled end **16** and is arranged in parallel with the adjacent water-shedding channel **10**.

Each end edge **20** (only one shown) of the panel is sloped down so as to provide an overlapping joint between two roofing panels when arranged on a roof.

The nature of the particular shape of the roofing panel allows for the forming of the panel in a single press stroke, while using the optimum flow characteristics of the sheet metal without undue deformation, to eliminate buckling and excessive elongation in the form of metal fatigue and is to eliminate the forming of excess material at particular zones.

In use upon a roof each panel is assembled in an incline plane and supported by the usual roofing members provide a mating support with underlaying battens **21** (only one shown) along full front and back areas by the front fold **17** and the back upturned edge **14** or step. The fold of one panel rests on he base of the upturned edge of a lower panel. The fat nature of the upturned edge of the panel ensures that the panel is supported over the length of the batten and is secured by nailing at suitable points located along the fold and upturned edge of the panel.

In this inclined attitude of the panel water is shed by its main channels **10** and its end grooves provide the overlapping weatherproof construction where panels are overlapped. In fact improved roof waterproofing characteristics are obtained from the fully supported interlocking angles and folds of adjacent panels installed as the roof.

The back sloping area of each panel has made it possible to lower the main channels, than hither to and to extend the dimension of the upturn. This has increased overlapping fold and upturned areas between panels to give increased weather protection at this region.

What is claimed is:

1. A sheet metal roofing tile comprising a pattern of well-defined channels extending across it with a vertical upturned one edge connecting with a horizontal fold with a straight folding line providing a step and a downturned opposite edge extending across ends of the channels, each channel consisting of a base, angled sides and a sloping area connecting with the sloping sides extending from the respective end of the base and connecting with the vertical upturned one edge, and a further sloping area at the other end of respective sides of adjacent channels extending downwardly from a crown between such channels and connecting with the downturned opposite edge, and each sloping area being of a triangular shape.

2. A sheet metal roofing panel as claimed in claim 1 wherein each end edge is sloped downwards for providing an overlapping joint adjacent upturned and downturned straight edges of two respective panels when arranged on a roof.

3. A sheet metal roofing panel as claimed in claim 1, and wherein a base of each triangular shape is defined by a straight line with a downturned flange of the panel provided by a vertical fold along the respective edge of the panel.

4. A sheet metal roofing panel as claimed in clam 3, wherein planes of the downturned flange, the further ends and the base of each channel intersect in a straight line.

5. A sheet metal roofing panel as claimed in claim 3, wherein a bottom edge of the downturned flange is radiused.

6. A sheet metal roofing panel as claimed in claim 3, wherein along each crown a groove extends from the upturned edge to about the base of the further sloping ends and is arranged in parallel with adjacent channels.

* * * * *