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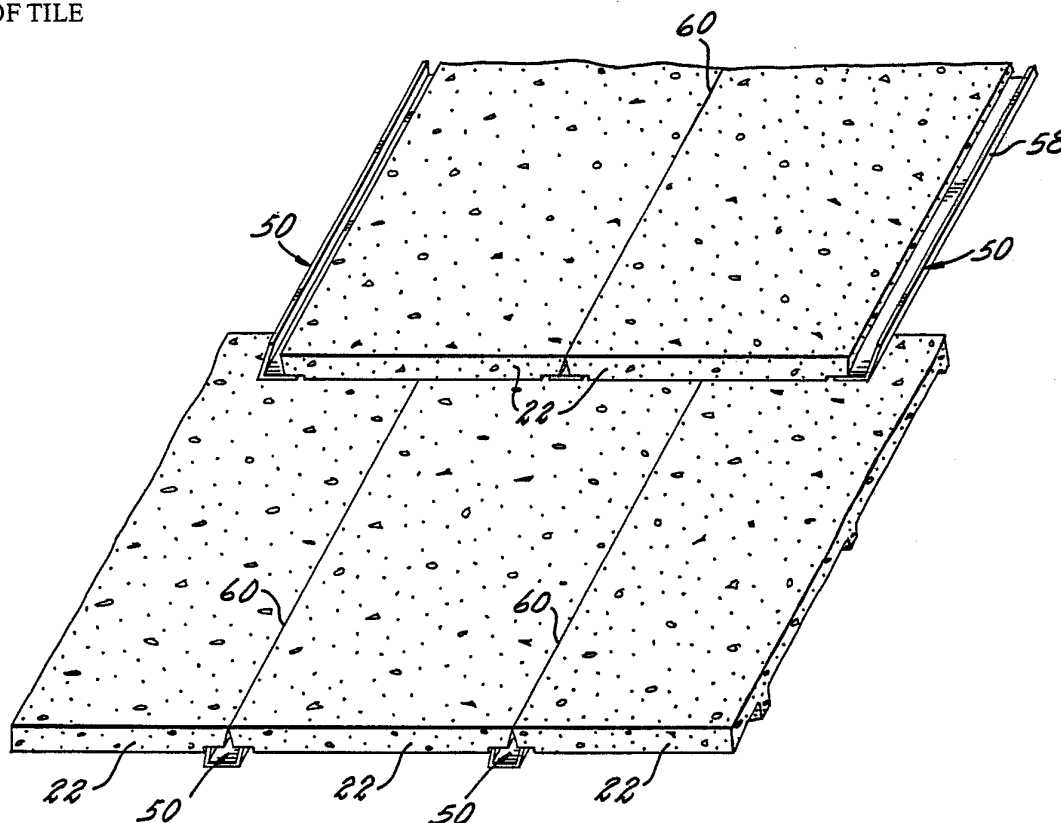
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(54) Title: ROOF TILE



(57) Abstract

A roof tile with a front wall (22) has a cooperating gutter member (50) positioned below the interface (60) of horizontal abutting tiles to collect the water that goes through the interface opening (60) and to discharge it over the vertically abutting roof tile in front.

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ROOF TILE

TECHNICAL FIELD

The present application is a continuation-in-part of U.S. patent application Serial No. 754,608, filed on July 12, 1985 now allowed, and it is hereby incorporated by reference.

BACKGROUND ART

The problem of cracked roof tiles, specially, when roofers walk on them is often traced to the lack of support resulting from partially overlapping of adjacent roof tiles. The parent application solved that problem by providing a honeycomb frame that has substantially a wedge shape. The interlocking features in that tile, however, were not suitable for currently known production molds.

Applicant believes that the closest reference corresponds to U.S. patent No. 522,686 issued to John E. Donaldson in 1984. However, it differs from the present invention because it did not achieve any material cost savings with its wedge-shape underside. Donaldson's tile is a solid piece and is, consequently, bulky and heavy. The small grooves carved in on the extensions of the tile do not effectively route the water down if the rain is substantial.

Other patents describing the closest subject matter provide for a number of more or less complicated features that fail to solve the problem in an efficient and economical way. None of these patents suggest the novel features of the present invention.

IV. SUMMARY OF THE INVENTION

It is one of the main objects of the present invention to provide a roof tile that is well rested on the roof sheathing and withstands the weight of persons walking over it.

It is another object of this invention to provide a tile that can be manufactured in high production molds with favorable yield.

It is yet another object of the present invention to provide such a device that is inexpensive to manufacture and maintain while retaining its effectiveness.

Further objects of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing the invention without placing limitations thereon.

V. BRIEF DESCRIPTION OF THE DRAWINGS

With the above and other related objects in view, the invention consists in the details of construction and combination of parts as will be more fully understood from the following description, when read in conjunction with the accompanying drawings in which:

Figure 1 represents a top view in perspective of the roof tile subject of the present application.

Figure 2 shows an end view of the roof tile and also showing the bottom of the roof tile.

Figure 3 illustrates several adjacent roof tiles as they would look when properly installed on a roof.

Figure 4 is a representation of the gutter member used between horizontally abutting tiles.

Figure 5 is a cross-section of several vertically abutting roof tiles, partially overlapping on their ends.

VI. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to figure 1, where the present invention generally referred to with numeral 10, it can be seen that the

roof tile has substantially a flat rectangular shape and it is basically composed of upper or top rectangular member 20 and wedge frame member 30 integrally built on the underside of member 20. Upper rectangular member 20 has front wall 22, right wall 24, left wall 26 and rear wall 28. Longitudinal grooves 21 and 23 extend close to left and right walls 24 and 26, as shown in figure 2, on the underside of upper rectangular member 20. As in the parent application, frame member 30 has a honeycomb appearance which is intended to keep the cost and weight of the tile low while providing the necessary strength, as seen in figure 2. The lower surface 35 of frame member 30 provides adequate resting area that comes in contact with roof sheathing 80, as seen in figures 2 and 5.

In figure 3, sections of two rows of horizontally abutting roof tiles T are shown. It can be observed that a gutter member 50 is positioned below the interface openings 60 of the horizontally abutting tiles. The water that goes through openings 60 is collected by gutter member 50 and discharged over the vertically abutting tile in front. End 52 of gutter member 50 rests on the rear upper surface of the tile that is vertically abutting in front, as shown in figure 5. End 51 of gutter member 50 extends the longitudinal length of the tile to the front of frame member 30 of the vertically abutting tile behind. There is a clearance 85 between the underside of bottom member 54 of gutter member 50 of the frontmost tile T and roof sheathing 80 that is filled with

plaster or cement. Therefore, end 51 extends rearwardly keeping the same position of walls 56 and 58 inside grooves 21 and 23, as seen in figure 6.

Figure 4 shows gutter member 50 which is preferably made out of a light plastic material that is not susceptible to the elements. Walls 56 and 58 extend upwardly from bottom member 54 in gutter member 50. Walls 56 and 58 enter inside longitudinal grooves 21 or 23.

It is believed the foregoing description conveys the best understanding of the objects and advantages of the present invention. Different embodiments may be made of the inventive concept of this invention. It is to be understood that all matter disclosed herein is to be interpreted merely as illustrative, and not in a limiting sense, except as set forth in the following appended claims.

VII. INDUSTRIAL APPLICABILITY

It is apparent from the previous paragraphs that an improvement of the type for such roof tiles is quite desirable for a roof tile that is well rested on the roof sheathing and withstands the weight of persons walking over it.

VI. CLAIMS

What is claimed is:

1. A roof tile to be contiguously arranged in horizontal and vertical rows, comprising:

- A. a substantially rectangular top member having an upper side, an underside, front, rear, left and right walls, and including parallel to and substantially close to said right and left walls two longitudinally extending grooves formed on said underside and further including two longitudinal rib members extending parallel to said groove and being located between said grooves and said left and right walls;
- B. a substantially rectangular frame member attached to the underside of said top member having longitudinal and lateral reinforcement members within said frame member and defining at least four cavities, said frame structure being adjacent to said rear wall and having a smaller longitudinal length and width than said top member so that an interlocking cavity is formed with the front portion of the underside of said top member and said frame thereby

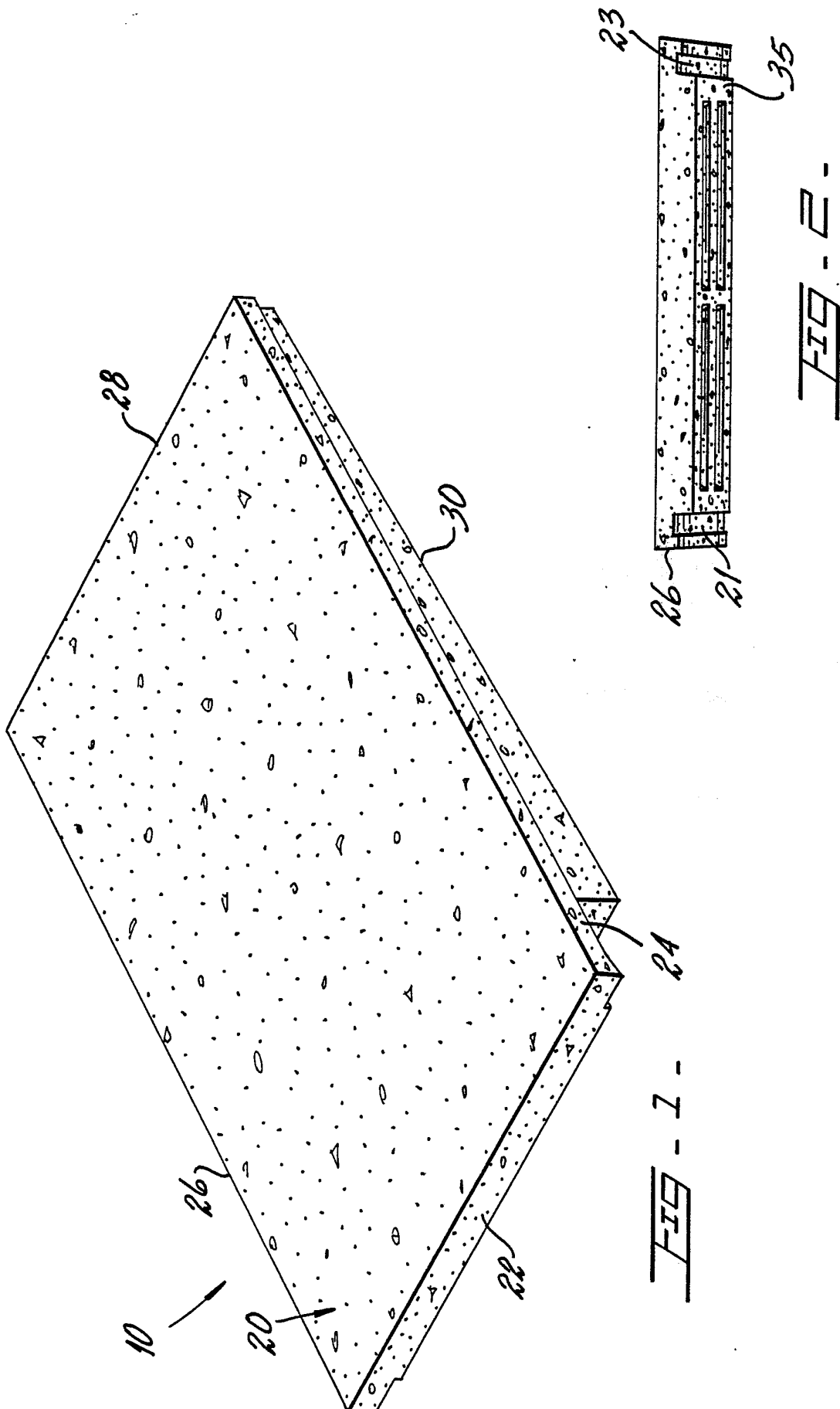
allowing the housing of a portion of the rear part of a longitudinally contiguous tile within said interlocking cavity; and

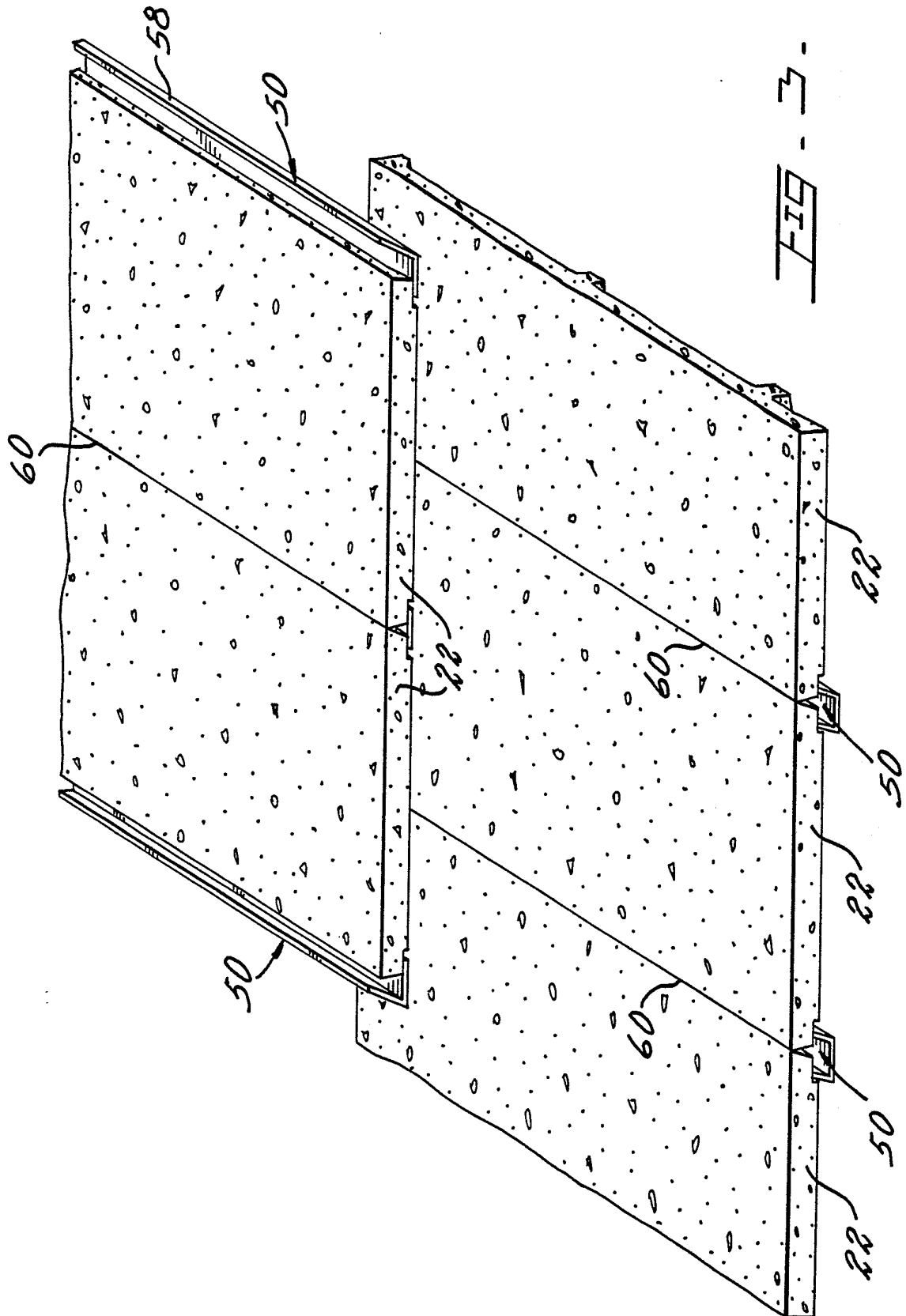
- C. longitudinal gutter means having a flat bottom and upwardly extending side walls that cooperate with said longitudinal grooves and said walls being substantially housed therein so that when said roof tile is horizontally abutting with a similar tile said gutter means is positioned below the interface opening of the tiles.

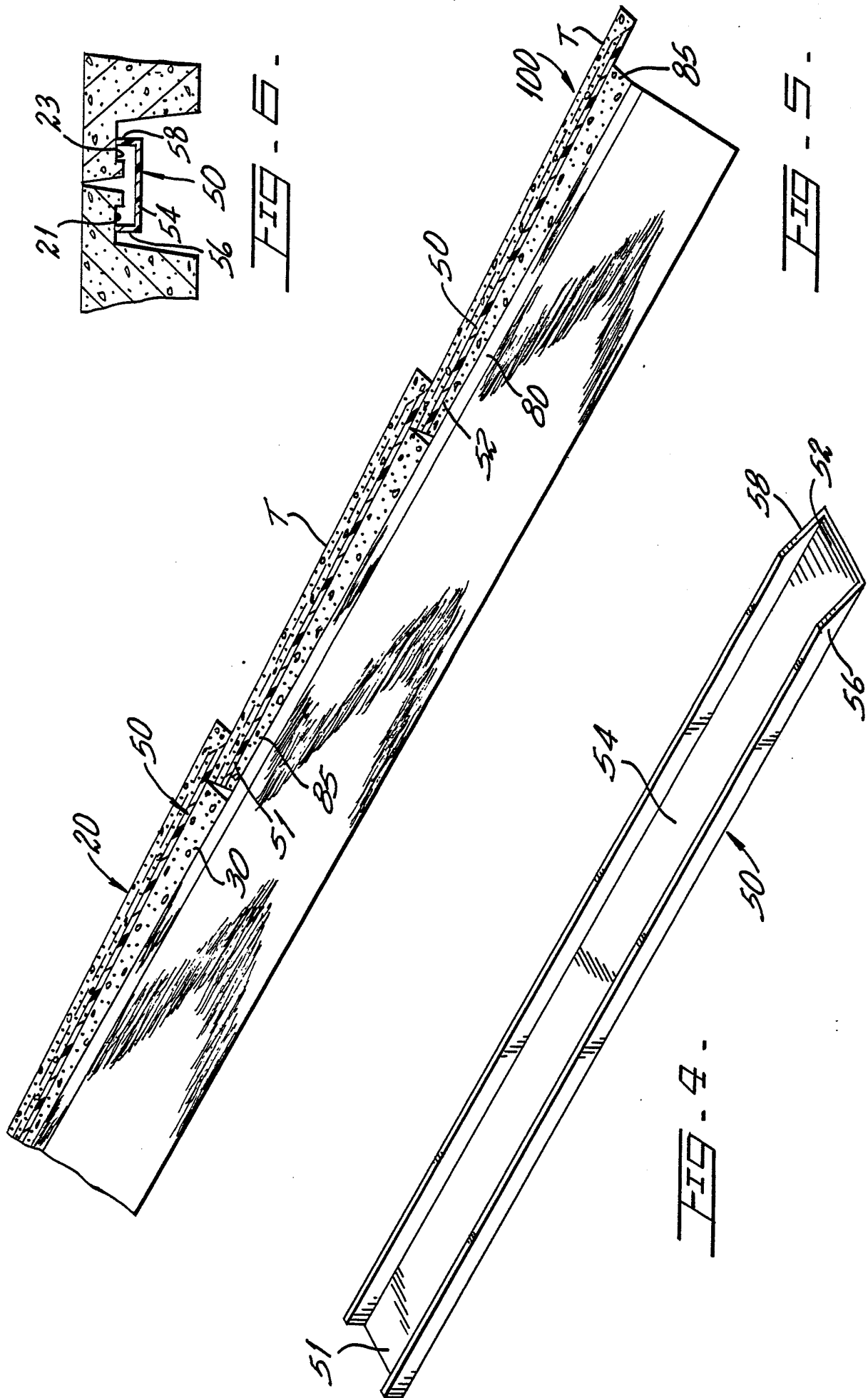
2. The roof tile set forth in claim 1 wherein said frame member has a wedge like elevational shape thereby increasing the depth of said frame member towards the front of said tile.

3. The roof tile set forth in claim 1 wherein said gutter means includes a front end and a rear end and said gutter means extends the entire length of said tile so that said front end rests on the upper surface of the top member of a vertically contiguous tile in front of said gutter means.

4. The roof tile set forth in claim 3 wherein said gutter means is made out of a plastic material.

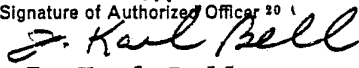






INTERNATIONAL SEARCH REPORT

International Application No PCT/US 87/00595

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ³		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int. Cl. (4): E04D 3/362		
U.S. Cl. 52-536		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁴		
Classification System	Classification Symbols	
US	52/533, 536, 539, 588, 595 D25/80	
Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched ⁵		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category *	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
Y	US, A, 4,574,536 (BAMBER) 11 March 1986.	1 & 2
Y	US, A, 3,434,260 (CARTER) 25 March 1969.	1-4
Y	US, A, 152,991 (HAMEL) 14 July 1874.	1 & 2
&	US, A, 4,606,164 (MENDEZ) 19 August 1986.	1 & 2
A	US, A, 522,686 (DONALDSON ET AL) 10 July 1894.	1 & 2
A	US, A, 953,939 (ARNOLD ET AL) 05 April 1910.	1 & 2
A	US, A, 3,740,914 (DIEZ) 26 June 1973.	1 & 2
A	US, A, 3,848,383 (WILSON ET AL) 19 November 1974.	3
* Special categories of cited documents: ¹⁵ "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search ²	Date of Mailing of this International Search Report ²	
16 April 1987	18 MAY 1987	
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ISA/US	 J. Karl Bell	