July 24, 1934. H. D. BROWN 1,967,764

TILE ROOF

Filed July 2, 1932 2 Sheets-Sheet 1

Fig. 1.

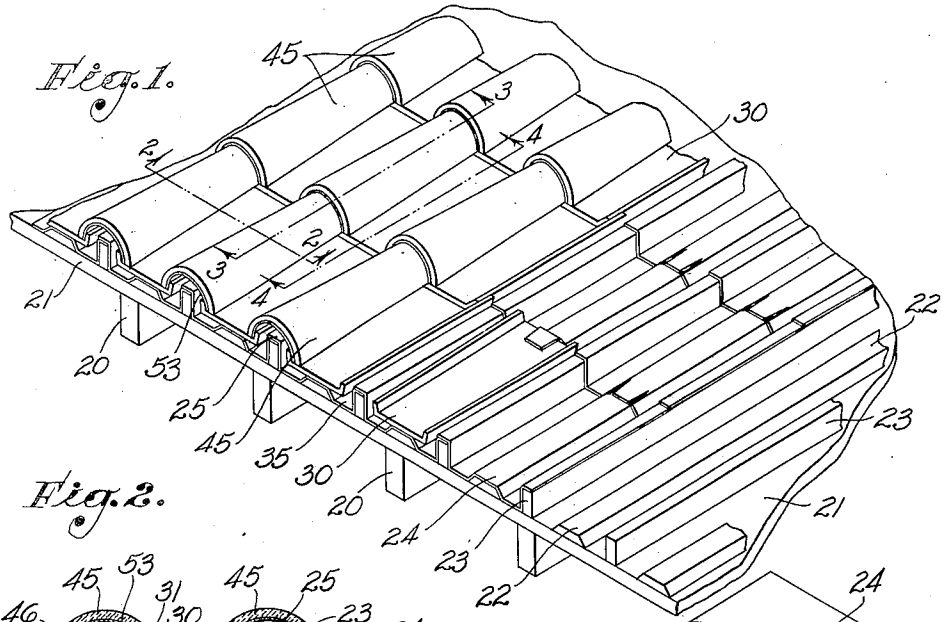


Fig. 2.

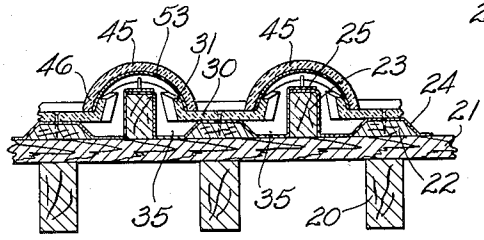


Fig. 5.

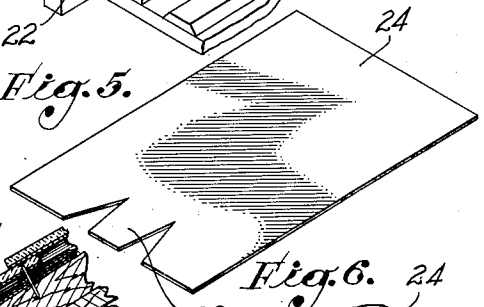


Fig. 6.

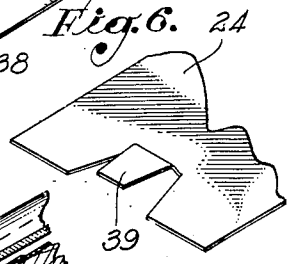


Fig. 3.

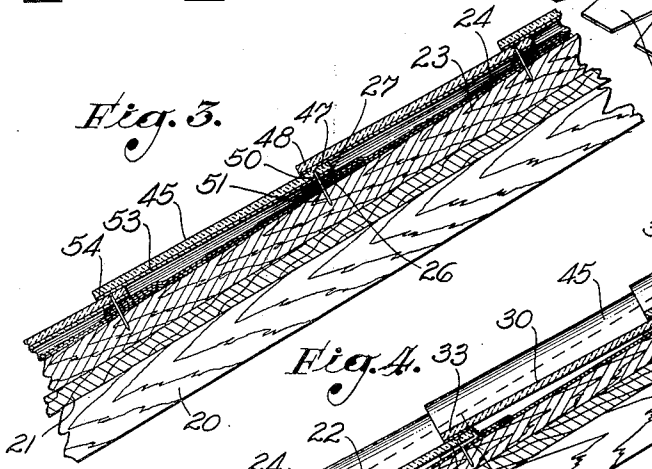
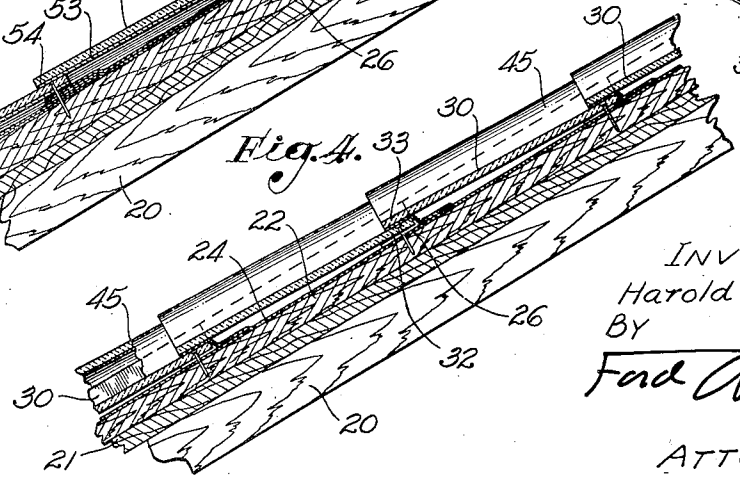


Fig. 4.



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Filed July 2, 1932 2 Sheets-Sheet 2

Fig. 7.

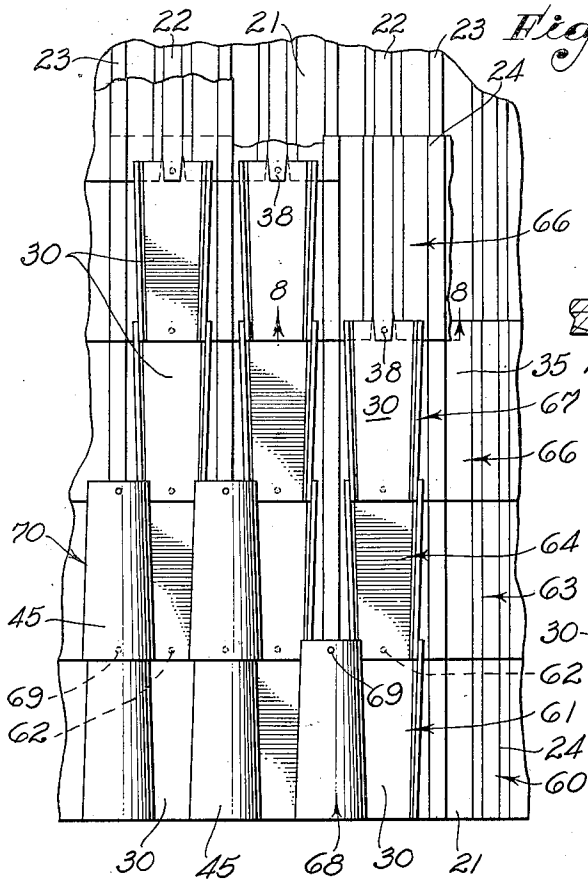


Fig. 8.

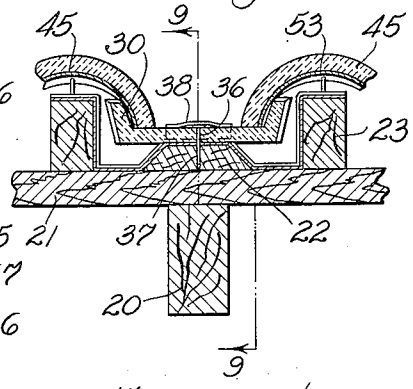


Fig. 9.

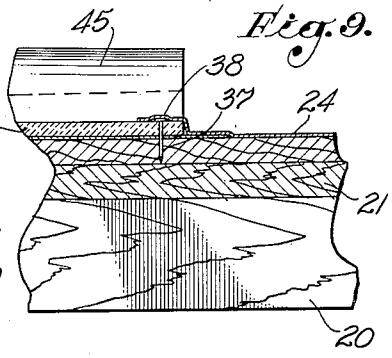


Fig. 10.

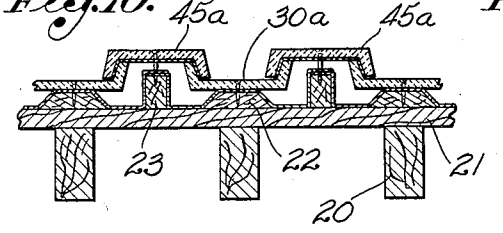


Fig. 11.

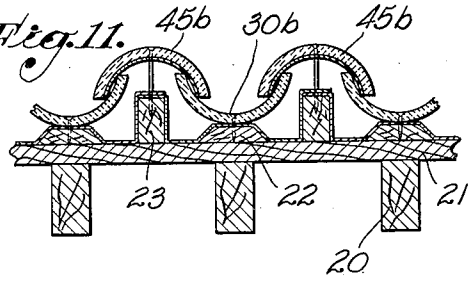
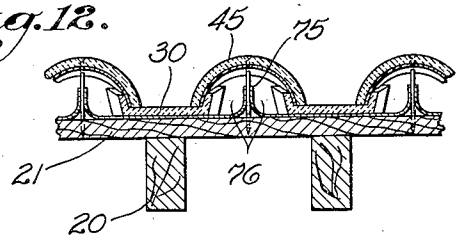


Fig. 12.



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UNITED STATES PATENT OFFICE

1,967,764

TILE ROOF

Harold D. Brown, Los Angeles, Calif.

Application July 2, 1932, Serial No. 620,631

9 Claims. (Cl. 108—10)

My invention relates to a novel tile roof and a novel method of laying same.

It is an object of my invention to provide a tile roof which includes tile members and sealing members which are so disposed that leakage cannot occur, in which repairing may be quickly and economically adjusted, and in which any water seeping through the tile members will flow into drain troughs provided by my invention and will be carried thereby from the roof.

The usual type of tile roof consists of tile members placed on the roof sheathing, which roof sheathing has first had applied thereto a covering of water-proof material such as asphalt-impregnated felt. It is the usual practice to completely cover the roof sheathing with this covering of felt and to thereafter lay the tile in place. During the laying of the tile, the felt covering sometimes becomes injured and furthermore it is common practice to secure certain or all of the tile members in place by a nail driven through each of the tile members and driven into the roof sheathing. The nail is caused to penetrate the felt covering and thus provides an aperture through which water may pass should the water in some manner get beneath the tile members.

It is an object of my invention to provide a tile roof in which the water-proof material or asphalt-impregnated covering is applied in sections and is placed on the roof as the tile is placed thereon. In the forms of my invention illustrated herein, there is an asphalt-impregnated member, or a sealing member, placed below each of the tile members. The sealing members are placed in overlapping position and the tile members are also placed in overlapping position. By this arrangement the sealing members are not laid on the roof prior to the time that the tile is laid, and are therefore not exposed so that the same may be injured.

It is a further object of my invention to provide a tile roof of the character in which the sealing members are so laid that the nails or other securing means employed for the purpose of holding the tile members in place are covered so that if any moisture should get below the tile members, it is impossible for this moisture to reach the apertures formed by the driving of the securing nails, or other securing means, in place, since the same are protected by tab means formed on certain of the sealing members.

A still further object of my invention, as mentioned above, is to provide drain troughs on the roof below the tile members into which any liquid which may get below the tile members may pass and be carried thereby from the roof. It is well known that most types of tile absorb moisture and that during heavy rains moisture will seep through the tile members. In fact, the placing of the asphalt-impregnated covering below the tile members is to prevent this liquid from leaking through the roof sheathing and into the room covered by the roof.

In the preferred form of my invention the drain troughs are located away from any apertures which may be formed by the tile securing means, and the roofing elements are so designed that all liquid which gets below the tile members is guided away from the locations of the securing means and is guided toward the drain troughs.

It is in addition to the above an object of my invention to provide a method whereby the elements which compose the roof of my invention may be economically laid on a roofing structure.

Having described the essential characteristics, I will now describe the details of the various forms of my invention. During the course of the following detailed description in which reference will be had to the accompanying drawings, I will point out the details of constructon of the roof of my invention and the method of laying same, as well as objects and advantages which are of importance in addition to those recited heretofore.

In the drawings,

Fig. 1 is a perspective view illustrating one form of roof of my invention.

Fig. 2 is a section taken as indicated by the line 2—2 of Fig. 1.

Fig. 3 is a section taken as indicated by the line 3—3 of Fig. 1.

Fig. 4 is a section taken as indicated by the line 4—4 of Fig. 1.

Fig. 5 is a perspective view of a sealing member of my invention.

Fig. 6 is a fragmentary perspective view of a sealing member of my invention showing tab means in a position ready to be installed in place.

Fig. 7 is a plan view showing a roof of my invention partly assembled, which view will be referred to when the method of laying my invention is discussed.

Fig. 8 is a section taken on the line 8—8 of Fig. 7.

Fig. 9 is a section taken on the line 9—9 of Fig. 8.

Figs. 10, 11, and 12 are fragmentary sectional views corresponding to Fig. 2, showing alternative forms of my invention.

I will describe the first form of my invention

by referring to Figs. 1 to 9 inclusive. As shown best in Fig 1 the numeral 20 represents rafters to which a roof sheathing 21 is secured. The rafters and sheathing 20 and 21 respectively constitute a roof construction and provide a supporting surface of my invention. Secured to the sheathing 21 are a plurality of pan supports 22 and cap supports 23. These members 22 and 23 extend parallel to the rafters 20 and extend from the eaves to the ridge of the roof. It will be noted from Fig. 1 that the pan and cap supports 22 and 23 are alternately arranged. It will further be noted, as illustrated in the drawings, that the pan supports 22 are relatively shallow while the cap supports 23 are relatively tall.

Placed over the roof sheathing 21 and over the pan and cap supports 22 and 23 is a plurality of sealing members 24. These sealing members 24 are formed from a water-proof material and are preferably asphalt-impregnated felt. These sealing members 24, for the purpose of identification, may be referred to as pan sealing members 24, since they rest under the pantile which will be referred to hereinafter. As illustrated best in Figs. 2 and 8, the sealing members 24 closely follow the contour presented by the upper surfaces of the roof sheathing 21 and the pan and cap supports 22 and 23. The adjacent sealing members 24 overlap each other at the upper part of the cap supports 23 and have overlapping portions 25. The sealing members 24 are arranged in rows which extend from the eaves of the roof to the ridge thereof and the upper ends 26 are overlapped by or extend under lower edges 27 of a successive sealing member 24. It will therefore be seen that the sealing members 24 provide a complete coverage for the roof.

Supported on each of the pan supports 22 is a series of pantiles 30, each tile being tapered so as to be larger at their upper ends and which have upstanding walls 31. The upper end 32 of each pantile 30 is overlapped by or extends under the lower end 33 of a succeeding pantile 30, as disclosed clearly in Figs. 1 and 4. It will be observed that there is a row of pantiles 30 arranged in overlapping relation above each of the pan supports 22. As shown best in Figs. 2 and 8, the pantiles 30 by reason of their being supported by the pan supports 22 are raised from the upper surface of the roof sheathing 21 with the result that drain troughs 35 are provided below the opposite sides of each row of pantiles 30. Expressing this construction in another manner there is a drain trough between each pan support and cap support 22 and 23.

For the purpose of securing the pantiles 30 in place there is a small opening 36 provided in the upper portion of each pantile 30 through all or through certain of which an attaching means or a securing means, such as a nail 37, is extended. This nail is driven into the adjacent pan support 22 and, as disclosed best in Figs. 8 and 9, punches a hole through the upper part 26 of the sealing member 24 which rests below the pantile 30 which is being secured in place. As disclosed clearly in Figs. 5 and 6, each sealing member 24 is provided with a tab means 38 at its lower end which is adapted to be deflected upwardly into a position 39, as disclosed in Fig. 6. When the sealing member 24 is installed in place, the tab means 38 is raised into the position indicated by the numeral 39 in Fig. 6 and then extends above the upper end of the preceding pantile 30 and covers the portion where the attaching means or nail 37 is situated. This is clearly illustrated in Figs. 8 and 9 wherein the tab means 38 is shown in a raised position in which it extends above the upper end of the preceding pantile 30.

Positioned above each cap support 23 is a series of cap tiles 45 which have extremities 46 which extend over the upstanding walls 31 of adjacent pantiles 30. These cap tiles 45 are tapered so as to be smaller at their upper ends, and the upper end 47 of each cap tile is overlapped by or extends under a lower end 48 of a succeeding cap tile. An opening 50 is formed in the upper end 47 of each cap tile 45 and for the purpose of securing each of these cap tiles in place, an attaching or securing means, such as a nail 51, is extended through the opening 50 and is driven into the cap support 23 situated therebelow. It will be noted that the securing means or nail 51 punches the overlapping edges 26 and 27 of those portions of the sealing members 24 which rest on the cap support 23 at this place.

For the purpose of forming complete sealing below each cap tile 45, I provide sealing members 53 which may be identified as cap sealing members. Below each cap tile 45 there is placed one of the sealing members 53. These sealing members 53 are placed as the cap tiles are placed in position on the cap supports 23, and the lower end 54 of each sealing member 53 extends over the securing nail 51 of a preceding cap tile 45 and thus completes a seal at this point.

In Fig. 7 I have illustrated in plan view a tile roof of my invention which is but partly assembled. I will now refer to this figure and describe more clearly the manner in which the different elements of the roofing are installed in place. The first step in applying the roof of my invention is to secure the pan and cap supports 22 and 23 in place. After these members have been laid in place a lower row 60 of sealing members 24 may be positioned as indicated in Fig. 7. These sealing members 24 are placed so as to adhere to the contour of the sheathing 21 and the pan and cap supports 22 and 23 as shown clearly in Figs. 2 and 8. The next step is to place a row 61 of pantiles 30 directly on the row of sealing members 60. These pantiles constituting the row 61 are positioned as disclosed in Figs. 2 and 8, and are secured in place by securing means, such as nails 37, which I will identify by the numeral 62. The next step is to install in place a second row of sealing members 24, which row I will indicate by the numeral 63. This row of sealing members 24 are positioned as explained in connection with the row 60, with the exception that the tabs 38 thereof are raised into a position indicated by the numeral 39 in Fig. 6 so that these tabs extend over the upper portions of the row of tiles 61 so as to cover same, as indicated in Figs. 8 and 9, which prevents water leakage at this point.

The next step in the process is to place on the rows 63 of sealing members 24 a row 64 of pantiles 30. The lower ends of the pantiles of the row 64 are caused to overlap the upper ends of the pantiles of the row 61, as disclosed in the sectional view, Fig. 4. Additional rows 66 of sealing members 24 and rows 67 of pantiles 30 may be now laid, if desired, or a row 68 of cap tiles 45 may be laid on top of the row 61 of pantiles 30. The sealing members 53 may be laid simultaneously with the cap tiles 45 with which they are associated or the sealing members 53 may first be laid in place and the cap tiles may thereafter be placed. It

is quite convenient, however, to first place the sealing members 53 in the cap tile 45 and then place the assembly of these two parts in proper position. After placing the row 68 of cap tiles 45 in place, the securing nails 51 are installed as indicated by the numeral 69. After the row 67 of pantiles have been laid, a second row 70 of cap tiles 45 with their corresponding sealing members 53 may be laid and secured in place. This process may be continued until the roof has been completely formed.

The tile members arranged in accordance with my invention provide a complete coverage for the roof and under ordinary weather conditions will form a substantially water-tight coverage. Should heavy rains occur or should one of the tile members become injured and leakage occur, the water cannot reach the sheathing 21 and pass therethrough into the building in view of the fact that the sealing members 24 and 53 provide a second complete coverage which is water-proof and does not admit of the passage of water or moisture therethrough. The nail holes formed through any of the sealing members when the nails 37 or 51 are secured in place are covered, as previously pointed out, by an overlapping of the lower end of a succeeding sealing member. For this reason the coverage is 100% and there is no possibility of any leakages through this coverage provided by the sealing members 24 and 53. Should it occur that any water or moisture gets through the tiles, it is guided by the contour of the sealing members disposed over the sheathing 21 and the pan and cap supports 22 and 23 so that it passes into the drain troughs 35. It will be noted that the drain troughs are remote from the points where any of the sealing members are penetrated by the nails 37 and 51 which further eliminates any possibility of leakage. The tabs 38 being raised so as to extend over the upper end of a preceding pantile 30 guides any water which is flowing downward at this point into either of the troughs 35 on either side thereof. A roof of this character has been in use for a considerable length of time and there has been no leakage whatever.

A very important advantage of my invention in addition to the features which I have just pointed out is that the sealing members are laid on the roof as the tiles are laid in place, and there is no possibility of these sealing members being injured while in place and before the tile members have been placed over them. This reduces to a minimum the possibility of any defects in the roof when originally installed.

Should any injury be done to the roof after it is installed, it is very easy to remove the tiles from any portion of the roof and to remove the sealing members thereat and to replace these parts with new ones in perfect condition. It is possible in my invention to very economically repair a roof in view of the fact that the point where leakage is occurring may be determined and the tile and sealing members at that point may be replaced without disturbing other portions of the roof.

In Fig. 10, I have illustrated a form of my invention which includes pantiles 30*a* and cap tiles 45*a* which are of the same shape as the pantiles 30 in the form of my invention already described. In Fig. 11 I illustrate the form of my invention in which pantiles 30*b* and cap tiles 45*b* are of the same shape as the cap tiles 45 in the form of my invention first described. These views have been added merely to illustrate that the shapes of the tile members may be changed in design without voiding the features of the invention.

In Fig. 12 I illustrate a form of my invention similar to that disclosed in Figs. 1 to 9 inclusive except that the pan supports 22 and the cap supports 23 have been eliminated. In this form of the invention there are no drain troughs 35 but the other features of the invention are present. In this form of my invention now being described, the edges 75 which in the form of the invention disclosed in Figs. 1 to 9 inclusive were overlapped, as indicated at 25 in Fig. 2, are curved upwardly so that a trough 76 is formed at each side of the pantile 30. This type of roof is not thought to be as dependable as the other forms of my invention, but is a cheaper construction which has the various features of my invention incorporated therein.

I believe my invention to reside in the particular arrangement of the tiles and sealing members and in the method whereby these members are installed in place. As I have illustrated in Figs. 10 to 12 inclusive, various changes may be made in the details without departing from the spirit and scope of my invention and without eliminating the principle of the invention. I therefore do not wish to be limited to the exact details of construction which I have disclosed but wish my invention to be broadly construed in accordance with the new principle involved and to be construed as defined by the appended claims.

I claim as my invention:

1. In a tile roof of the class described, the combination of: a supporting surface; pan supports on said supporting surface; cap supports on said supporting surface; a plurality of pantiles arranged on said pan supports; a plurality of cap tiles arranged on said cap supports and overlapping adjacent pantiles; and individual sealing members below each of said tiles.

2. In a tile roof of the class described, the combination of: a supporting surface; pan supports on said supporting surface; cap supports on said supporting surface; a plurality of pantiles arranged on said pan supports; a plurality of cap tiles arranged on said cap supports and overlapping adjacent pantiles; and individual sealing members placed in overlapping relation below each of said pantiles.

3. In a tile roof of the class described, the combination of: a supporting surface; pan supports on said supporting surface; cap supports on said supporting surface; a plurality of pantiles arranged on said pan supports; a plurality of cap tiles arranged on said cap supports and overlapping adjacent pantiles; attaching means for certain of said pantiles for attaching same in place; and individual sealing members placed in overlapping relation below said pantiles, certain of said sealing members having tab means adapted to extend over said attaching means.

4. In a tile roof of the class described, the combination of: a supporting surface; pan supports on said supporting surface; cap supports on said supporting surface; a plurality of pantiles arranged on said pan supports; a plurality of cap tiles arranged on said cap supports and overlapping adjacent pantiles; and sealing means arranged below said tiles and providing drain troughs between said supporting surface and said tiles.

5. In a tile roof of the class described, the combination of: a supporting surface; a plurality of

pantiles supported by said supporting surface; a plurality of cap tiles overlappingly arranged relative to adjacent pantiles; and individual sealing members arranged below each of said pan tiles, said sealing members having their adjacent edges turned upward beneath said cap tiles and spaced from said pan tiles.

6. In a tile roof of the class described, the combination of: a supporting surface; a plurality of pantiles supported by said supporting surface; a plurality of cap tiles overlappingly arranged relative to adjacent pantiles; attaching means for certain of said pantiles for attaching same in place; and individual sealing members placed in overlapping relation below said pantiles, said sealing members lying flat on said supporting surface, certain of said sealing members having tab means adapted to extend over said attaching means, said tab means resting between overlapping pan tiles.

7. In a tile roof of the class described, the combination of: a supporting surface; a sealing member on said supporting surface; a pan tile resting on said sealing member; a securing means at the covered end of said pan tile; a second sealing member having a tab formed between notches of such a shape as to allow the side portions of said sealing member to rest below said pan tile and to allow said tab to rest over said pan tile to cover said securing means; said sealing member being sufficiently wide to extend beyond said pan tile; and a second pan tile resting on said second sealing member and overlapping the first-mentioned pan tile.

8. In a tile roof of the class described, the combination of: a supporting surface; cap supports on said supporting surface; sealing members on said supporting surface and extending over said cap supports; the joints between said sealing members being on said cap supports; pan tiles arranged on said sealing members between said cap supports; and cap tiles between said pan tiles and arranged above said cap supports.

9. In a tile roof of the class described, the combination of: a supporting surface; pan supports on said supporting surface; cap supports on said supporting surface between said pan supports; sealing members on said supporting surface and extending over said pan supports and said cap supports; pan tiles on said sealing members above said pan supports; and cap tiles on said sealing members above said cap supports.

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