May 21, 1935. T. R. KOBE 2,002,206

ROOFING TILE FASTENER

Filed Feb. 21, 1933

Fig. 1.

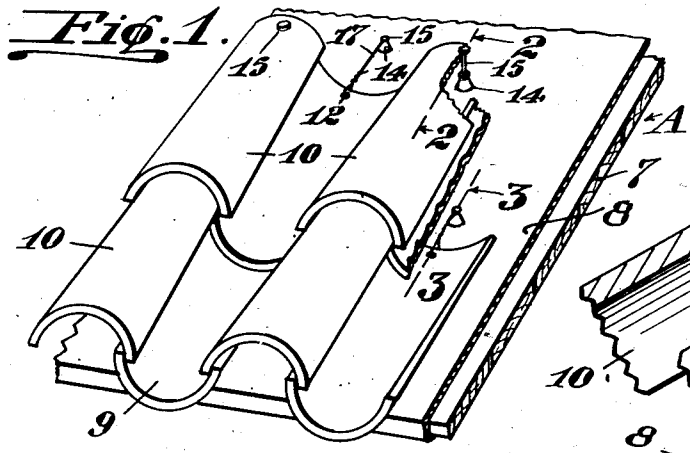


Fig. 2.

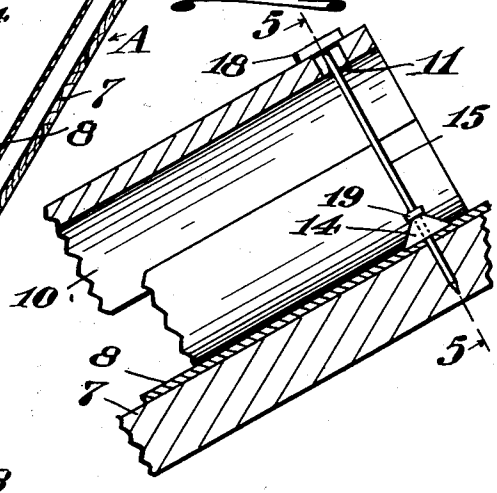


Fig. 3.

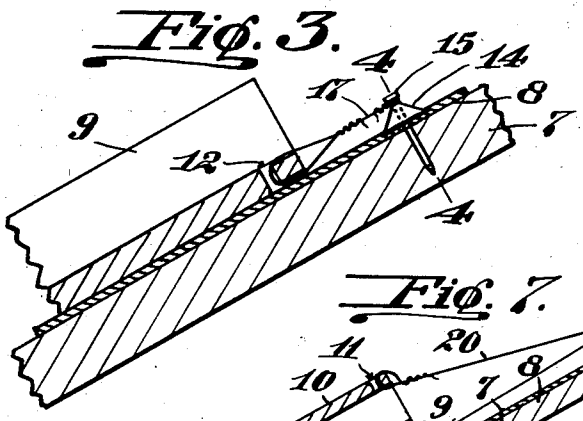


Fig. 4.

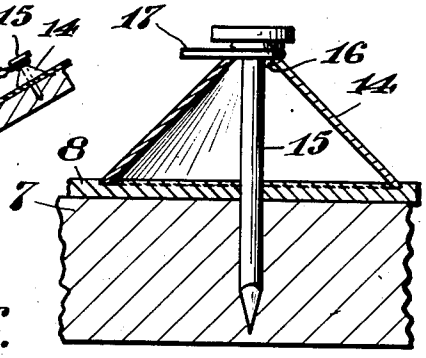


Fig. 7.

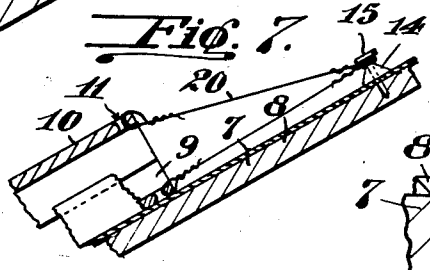


Fig. 5.

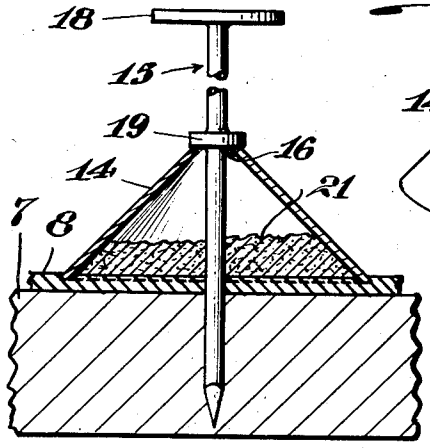


Fig. 6.

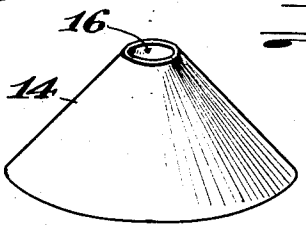
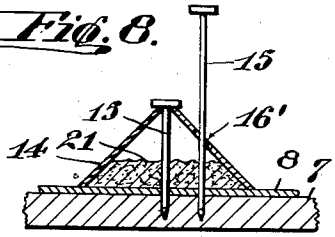


Fig. 8.



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ROOFING TILE FASTENER

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Application February 21, 1933, Serial No. 657,750

7 Claims. (Cl. 108—10)

This invention relates to a fastener for roofing tile and the like, which is adapted for use in securing roofing tile to a roof surface.

An object of the invention is to provide a means for attaching roofing tile to the membrane covered surface of a roof structure in such manner as to avoid leaks due to penetration of the membrane, as commonly occurs where the usual tile fastening means is employed.

Another object is to provide a non-leakable tile fastening device which is so constructed as to afford an individual fastening for each tile, whereby the several tiles on a roof surface will be independently attached to the roof sub-structure.

Another object is to provide a roof tile fastener of the above character which is simple and economical in construction, and which is adapted to be easily and quickly applied.

With the foregoing objects in view together with such other objects and advantages as may subsequently appear, the invention resides in the parts and in the combination, construction and arrangement of parts hereinafter described and claimed and illustrated by way of example in the accompanying drawing, in which:

Fig. 1 is a perspective view of a fragmentary portion of a tile roof, showing the manner of applying the invention;

Fig. 2 is a view in section and elevation as seen on the line 2—2 of Fig. 1, showing the manner of attaching the cover-tile to the roof;

Fig. 3 is a view in section and elevation as seen on the line 3—3 of Fig. 1, showing the manner of attaching the pan-tile to the roof;

Fig. 4 is a detail in section taken on the line 4—4 of Fig. 3;

Fig. 5 is a detail in section taken on the line 5—5 of Fig. 2;

Fig. 6 is a perspective view of a tapered shield employed in carrying the invention into effect;

Fig. 7 is a view in section and elevation, showing another manner of fastening the cover-tile by means of the invention;

Fig. 8 is a view in section depicting another mode of fastening the cover-tile.

Referring to the drawing more specifically, A indicates generally a portion of an inclined roof sub-structure which is here shown as embodying wooden sheathing 7 covered with a water shedding membrane 8, which latter comprises roofing paper, felt, or other sheet material, as is common in tile roof construction.

The invention is here shown as applied to the type of tile roof construction in which pan-tile 9 are arranged in spaced rows leading in the direction of the incline of the roof sub-structure, and rows of cover-tile 10 arranged to overlap the marginal portions of adjacent rows of the pan-tile. The tile members 9 and 10 are each provided in the usual manner with apertures 11 and 12, respectively adjacent their upper ends, for the reception of fasteners.

In carrying out the invention I employ a tapered shell 14 which constitutes a shield or seal as will hereinafter appear, which shell or seal is here shown as, and preferably is, frusto-conical or substantially conical in form and open at each of its ends.

However, the shell may be formed other than conical, since, as well obviously appear, a shell of pyramidal contour would answer the purpose, the essential feature being that the shell or seal be adapted to seat on the membrane 8 in a manner to closely contact therewith and form a water-tight joint therebetween and also afford a ready means of attachment with the sheathing 7.

The shell 14 is secured in place in a seated position on the membrane 8 by a headed fastener 15 here shown as being in the form of a nail, the shank of which is inserted through the opening 16 at the apex of the shell and is driven into the sheathing 1, as particularly shown in Figs. 4 and 5.

Where the device is employed in securing the pan-tile 9 in place, the fastener 15 may comprise an ordinary nail which is driven into the sheathing 7 through the shell 14 and membrane 8; the nail being initially driven into the sheathing such distance that a portion of the shank will protrude above the shell 14. A hanger 17 comprising a length of wire, or other flexible strip, is engaged at one end portion thereof with the aperture 12 of the pan-tile and has its other end portion looped or wrapped around the shank of the nail 15; the ends of the wire being twisted or otherwise connected or engaged in such manner as to afford a hanging attachment between the upper end of the pan-tile and the nail. The nail 15 is then driven into the sheathing such distance that the portion of the hanger 17 passing around the shank thereof will be caused to bear against the upper end of the shell 14 by the head portion of the nail as shown in Fig. 4; the nail being also driven into the sheathing such distance that the base portion of the shell will be caused to slightly penetrate the membrane 8 and thereby form such intimate contact between the lower end of the shell and the membrane as to produce a water-tight joint.

In the application of the invention to the fas-

tening of the cover-tile, the shank portion of the nail or fastener 15 is elongated as shown in Fig. 2 and is formed with double heads 18 and 19; the nail being adapted to be passed through the opening 11 in the cover tile to be driven in the sheathing through the shell 14. In this instance, the head 19 is arranged so as to abut against the upper end of the shell 14, as shown in Fig. 5, in such manner that when the nail is driven in place the head 19 will force the lower margin of the shell 14 into recessed engagement with the membrane 8.

The head 19 is formed of such size that it may be passed through the aperture 11 in the cover-tile while the head 18 is of a larger size and is such as not to pass through the aperture 11 and such that the marginal portion of the head 18 may seat on the upper marginal portion of the aperture 11, as shown in Fig. 2. The head 19, however, may be dispensed with by employing the construction shown in Fig. 8 in which the shell 14 is formed with an opening 16' located at a convenient point between the upper and lower margins of the shell, and which opening is adapted to receive the shank of an elongated nail 15 employed in fastening the cover tile. By this arrangement the shell 14 is secured in place by a short nail in the manner previously described with reference to Fig. 4; the shell being held in place by the head of the nail either with or without the interpositioning of the hanger 17. An ordinary nail of sufficient length may then be employed to secure the cover tile in place; the nail being inserted through the aperture 11 in the cover-tile and passed through the opening 16' in the previously attached shell 14 and driven into the sheathing 7 at a point within the boundary of the lower margin of the shell. There are instances, however, in which the cover-tile may be fastened in place in the manner similar to that previously described with reference to the fastening of the pan-tile, that is by means of a hanger 20, as shown in Fig. 7; the hanger 20 consisting of a wire or a similar flexible strip which is fastened at one end to the cover-tile through the aperture 11 and has its opposite end wound around the shank of the nail 15 and engaged between the head of the nail and the upper end of the shell 14 in the manner shown in Fig. 4 and hereinbefore described.

The application and operation of the invention is apparent from the foregoing; it being seen that in assembling the tile on the roof structure, as shown in Fig. 1, each individual tile will be attached to the roof structure as the tile is set in place and fastened independent of other tile. While the fastener for the pan-tile is shown in Figs. 1 and 3 as disposed in alignment with the longitudinal center of the pan-tile it will be understood that the fastener may be disposed to either side of such center, as for example at points beneath the cover-tile so that the fastener will not interfere with positioning of the contiguous overlapping pan-tile in proper relation to each other. In this instance, the hangers 17 will extend diagonally from the pan-tile to the fasteners. In some instances a pan-tile and a cover-tile may be attached to a single fastener by separate hangers 17 leading from the cover-tile and an adjacent pan-tile to a single fastener as indicated in Fig. 7. It will be observed that the portion of the membrane penetrated by the nail will be surrounded by a continuous wall which partially penetrates the membrane, thus preventing water which may flow over the upper surface of the membrane from passing to the point in the membrane penetrated by the nail. An effective water-tight connection is thus afforded between the roofing tile and the sheathing through the membrane interposed therebetween. In some instances the interior of the shell 14 may be filled or partially filled with a plastic cementitious material, as indicated at 21 in Fig. 5, previous to the application of the shell to the roof surface and through which filler the fastener 15 is driven. In this manner the material 21 will serve to completely seal the joint between the shell 14 and the membrane 8 and also seal the joint between the fastener 15 and the membrane 8, thus insuring against leakage due to penetration of the membrane by the fasteners. The cup shape of the shell facilitates the application of cementitious material to the interior or under side thereof.

When the fastener is put in place on the roof structure the conical walls of the shell in extending at an inclination from the roof to the nail head, or the wire hanger interposed between the upper end of the shell and the nail head, will act as a brace to stiffen and reinforce the portion of the nail shank protruding above the roof, in such manner as to prevent bending of the nail under the lateral pull imposed thereon through the hanger.

While I have shown and described a specific embodiment of my invention, I do not limit myself to the exact details of construction and arrangement shown, but may employ such changes and modifications in the parts and in their arrangement as occasion may require, coming within the meaning and scope of the appended claims.

I claim:

1. In a roof construction including an inclined sub-structure, a water shedding membrane covering said sub-structure, and roofing tile overlying said membrane; fastening members penetrating said membrane and engaging said sub-structure having upper end portions protruding above said membrane, shields surrounding said fastening members seating on said membrane in intimate contact therewith to form a water-tight seal around the point of penetration of said membrane by fastening members, means cooperating between said fastening members and shields for retaining the latter in place, and connections between said tile and the protruding upper end portions of said fastening members.

2. In a roof construction including an inclined roof structure, a water shedding membrane covering said structure, and roofing tile overlying said membrane; headed fastening members penetrating said membrane and engaging said structure having the head portions thereof spaced above the membrane, tapered shells surrounding said fastening members intimately seating on said membrane and retained in place thereon by the headed portions of said fastening members, and connections between the upper portions of said fastening members and said tile.

3. In a roof construction, a nail adapted to be driven into a roof structure, a hollow shell through which said nail is adapted to be passed, said shell having an enlarged open lower end adapted to seat on the roof structure and a reduced open upper end formed to receive the shank of said nail, and means for affording a connection between the upper end portion of said nail and a roofing tile.

4. A fastener for roofing tile comprising a frusto-conical shell having open ends, a nail hav-

ing the shank portion thereof extending through the open ends of said shell with the head portion thereof arranged adjacent the apex portion of the shell, said nail being adapted to be driven into a roof structure and to retain said shell with the margin of its open base portion intimately seated on the surface of said structure, and a flexible hanger engageable with said nail above said shell and adapted to be attached to a roofing tile.

5. A fastener for roofing tile comprising a hollow shell, a plastic body contained in said shell, a nail having the shank portions thereof extending through said shell and plastic body with the head of said nail spaced from said shell, said nail being adapted to be driven into a roof structure to retain said shell in place thereon, and a tile tying member connected to the shank of said nail between the head thereof and said shell and adapted to be attached to a roofing tile.

6. In a tile roof construction including an inclined roof structure, a water shedding membrane covering said structure, and roofing tile overlying said membrane; a hollow shell having an enlarged open end seating on the membrane, a plastic body contained in said shell extending over the portion of the membrane covered by said shell, a headed fastening member passed through said shell and plastic body penetrating said membrane and engaging said structure having the headed portion thereof spaced above said shell, and a connection between a tile and the portion of said fastening member protruding above said shell.

7. In a roofing structure, a nail adapted to be driven into a roof structure, a hollow frusto-conical shell having an opening at its small end to receive the shank of said nail and having its enlarged outer end adapted to seat on the roof structure, and a tile fastening wire connecting with the upper portion of said nail above said shell adapted to be connected to a roofing tile; said shell forming a brace to reinforce said nail against bending laterally.

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