Jan. 6, 1948. I. P. WHITEHOUSE 2,434,185

ROOF COVERING

Filed July 13, 1945 3 Sheets-Sheet 1

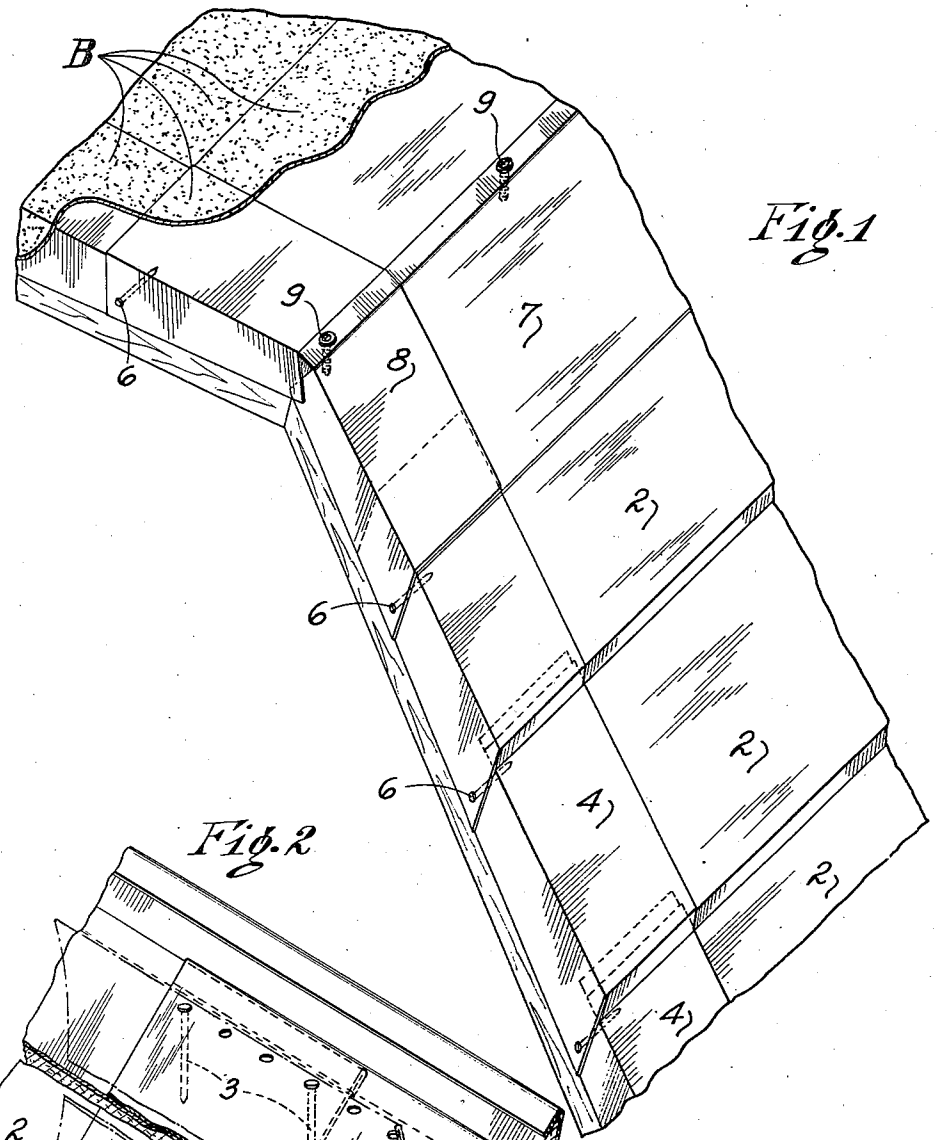


Fig. 1

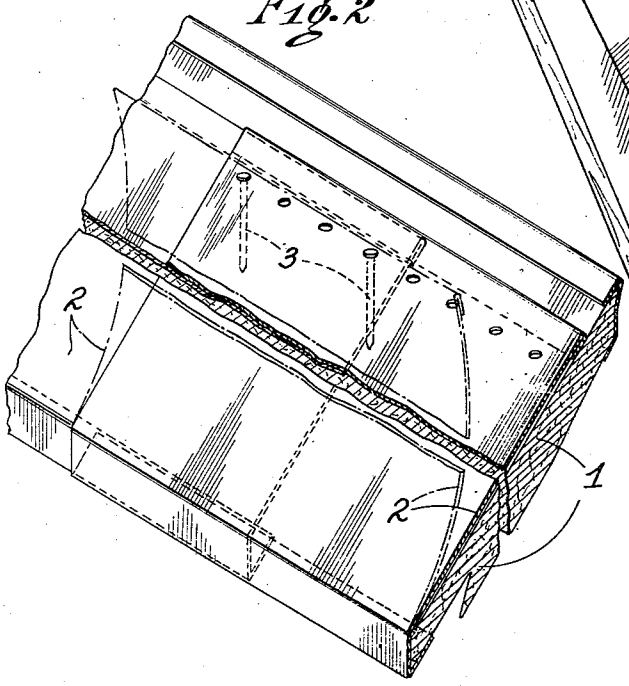


Fig. 2

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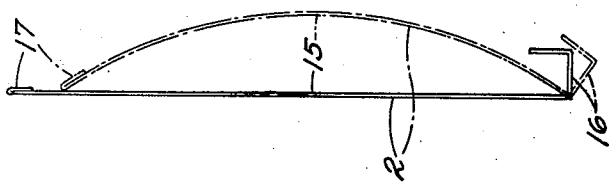


Fig. 6

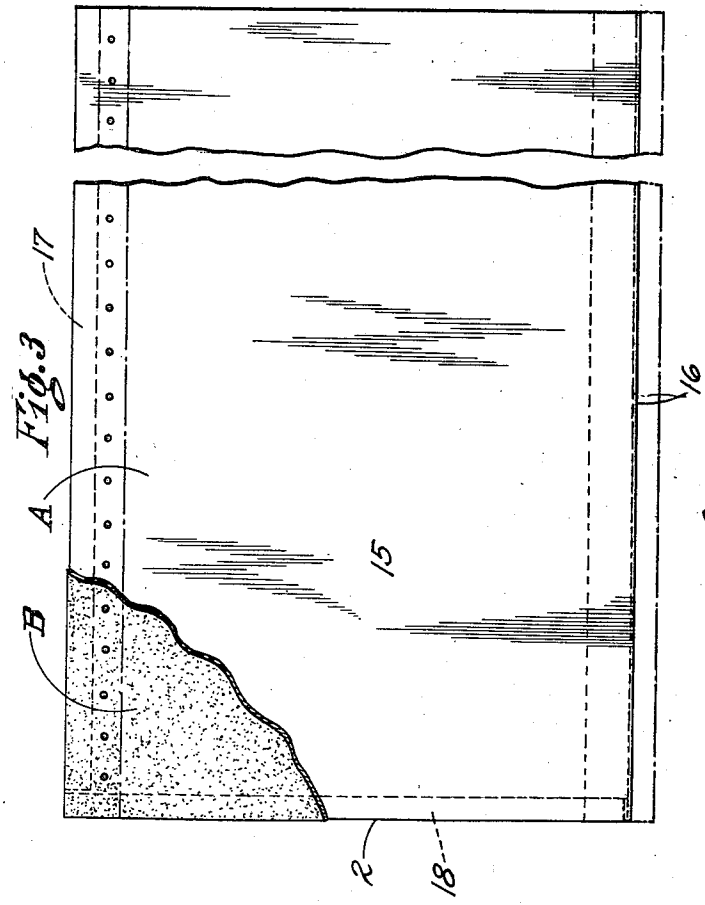


Fig. 3

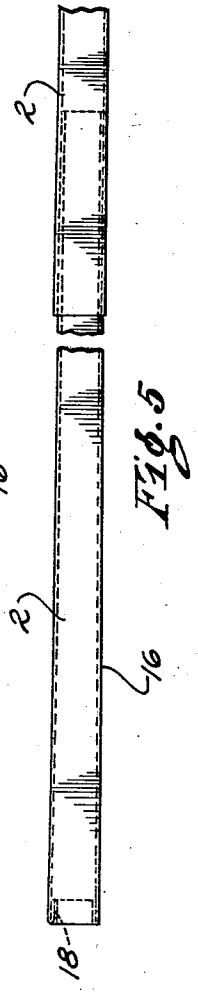


Fig. 5

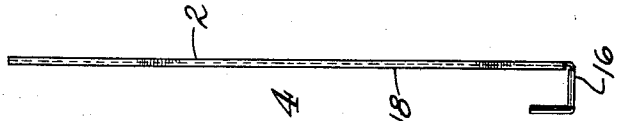


Fig. 4

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Fig. 8

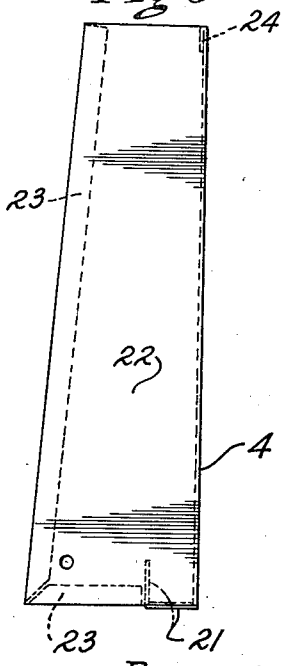


Fig. 7

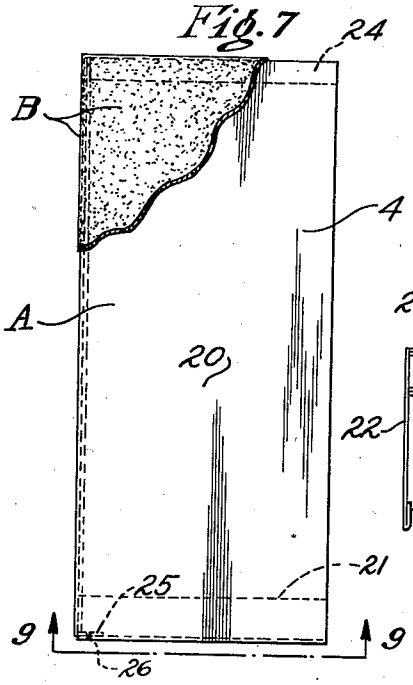


Fig. 9

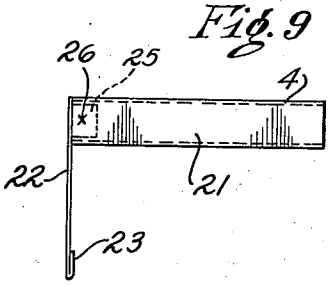


Fig. 10

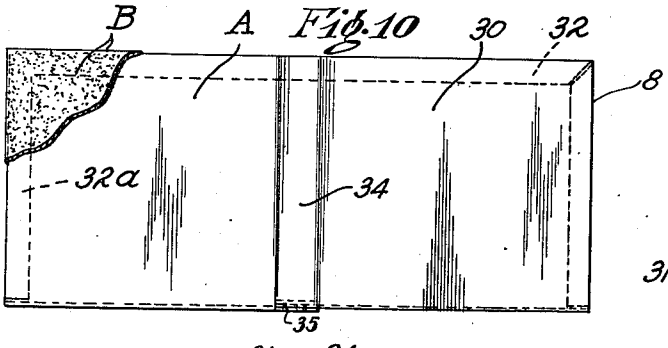


Fig. 12

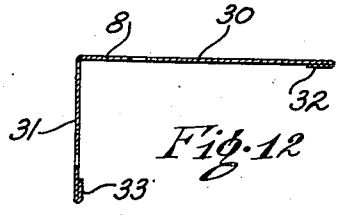


Fig. 11

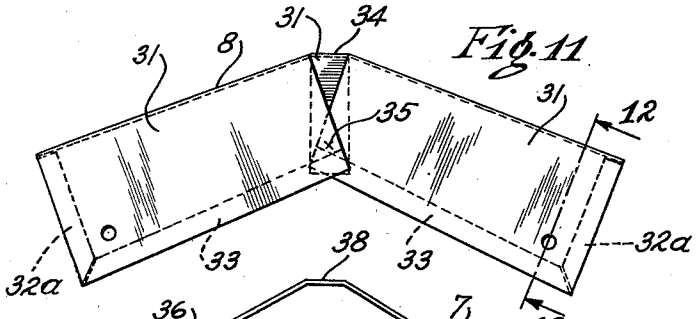
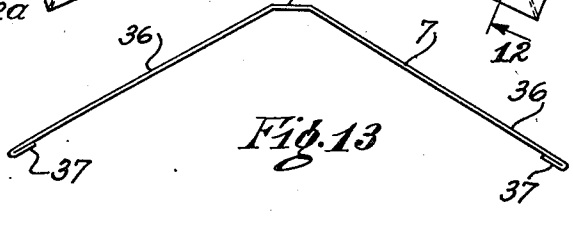


Fig. 13



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Patented Jan. 6, 1948 2,434,185

UNITED STATES PATENT OFFICE

2,434,185

ROOF COVERING

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Application July 13, 1945, Serial No. 604,903

5 Claims. (Cl. 108—17)

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The present invention relates generally to building construction and more particularly to enameled sheet metal shingles, ridge caps and gable ends for the roof of a building.

According to the present invention, roof members which may consist of composite material and span the space between two or more adjacent rafters, are provided with enameled sheet metal coverings embodying the present invention. Certain of these coverings, which will be referred to hereinafter as "shingles," are adapted to embrace the lower edges of the roof members and to press tightly against the upper surfaces thereof, and to overlap one another at their side edges so as to resist displacement by wind and to prevent water from penetrating into the space between the shingles and roof members. Certain of these coverings, which will hereinafter be referred to as "gable ends" are adapted to embrace the lower edges of roof members at the gable ends of the roof and to extend down past the side edges of the adjacent roof members so as to resist displacement by wind and to prevent water from entering into the space between the gable ends and the roof members. Certain of the coverings, which will be referred to hereinafter as "ridge caps" extend across the ridge of the roof and are secured to the ridge to prevent entrance of water into the space between the ridge caps and the shingles of roof members on either side of the ridge and to resist the action of wind.

While the present invention is particularly suited to roof construction, it is not limited thereto for some of the members, such as shingles and gable ends, may also be used with siding. Accordingly, the term "building member" as used herein is intended to mean and include not only roof members but also side wall members of a building.

The present invention will be better understood by those skilled in the art from the following description and the drawings which accompany this specification and in which,

Figure 1 is a fragmentary, perspective view of a roof embodying the present invention;

Figure 2 is a fragmentary, perspective view of a roof member and shingles of the present invention assembled therewith, one of the shingles being shown by dotted lines in the position which it occupies during the assembly of the shingle with the roof member;

Figures 3, 4 and 5 are, respectively, top plan and side and lower end elevational views of the shingle of Figs. 1 and 2;

Figure 6 is a side elevational view of the shingle of Figs. 3, 4 and 5, the full lines showing the curvature of the shingle before application to a roof member and the dotted lines showing the shape of such shingle when fully assembled with a roof member;

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Figures 7, 8 and 9 are, respectively, top plan and side and end elevational views of a gable end for the lefthand side of a roof;

Figures 10 and 11 are top plan and side elevational views of an end ridge cap;

Figure 12 is a cross-sectional view taken on lines 12—12 of Fig. 11; and,

Figure 13 is an end elevational view of an intermediate ridge cap.

Figures 1 and 2 show a portion of a roof in which there are roof members 1 long enough to rest on and span the space between two or more adjacent rafters (not shown) and of considerable width. These members 1 are arranged in overlapping courses. Each roof member 1 is provided with a shingle 2 which embraces the lower edge thereof and extends upwardly over its outer exposed surfaces nearly to the upper edge of the roof member. These shingles 2 overlap each other along their sides and are attached to the roof members 1 as by nails 3 which are driven thru the shingles near their upper edges. The roof of Fig. 1 is also provided with gable ends 4 which embraces the lower edges of the roof members and shingles 2 and extend down past the ends of members 1. These gable ends are secured to the roof as by nails 6. The roof of Fig. 1 also includes ridge caps 7 and 8. Intermediate caps 7 overlap the top roof members 1 on either side of the ridge and extend across the ridge and are secured to the ridge pole as by screws 9. End ridge caps 8 are like caps 7 except that they include flanges which extend down alongside of the gable ends and are secured against the ends of the roof members as by nails 6. The end ridge caps have securing means such as screws 9 extending therethru into the ridge pole.

Shingles embodying the present invention are better shown in Figs. 3 to 6 inclusive. Each of these shingles consists of sheet metal A covered with vitreous enamel B and comprises a body portion 15 which has a channel shaped lower edge 16, an upper edge 17 which is bent back upon its under surface, and one side edge 18 which is bent back on its under surface. The channel edge 16 tapers gradually from side edge 18 to the opposite side edge. The top edge 17 and side edge 18 are strengthened and reinforced by being bent back on themselves and hence can withstand the forces of wind without tearing or splitting.

The other side edge need not be reinforced for it is covered by a shingle or gable end and is thus protected from the action of the wind. The body portion **15** of shingles **2** is curved on an axis parallel to its lower edge so that the under surface, that is, the one engageable with the roof member **1**, is convex, as is better illustrated by the full lines in Fig. 6, and also by the dotted lines in Fig. 2. The metal is formed into the shape shown in Fig. 6 and is then enameled. Since normally there is no bending of the enameled shingle on a short radius, there is no danger of the enamel cracking or flaking off during use. The flexing required to flatten the curved body portion is not on a radius short enough to crack or dislodge the enamel.

When the shingles **2** are to be attached to roof members **1**, the channel edge **16** of such a shingle is slipped onto the lower edge of the roof member so that it embraces the latter and brings the convex surface of body portion **15** into contact with the outer surface of the roof member **1**. Then the curved body portion **15** is flexed by bringing the upper edge of the shingle into contact with the member **1**. Thereupon nails **3** are driven thru holes provided in the upper end of the shingle into the roof member to hold the two in assembled position. Such flexing results in flattening out the curved body portion **15** into substantially the full line position shown in Fig. 6 and the full line position shown in Fig. 2 as a result of the exertion of pressure on the shingle and the resistance offered thereto by the roof member **1**. The result of this flexing is close engagement of the shingle and roof member which prevents ingress of wind therebetween which might tend to dislodge the shingles and also insures maintenance of the flatness of the shingles on the roof over long periods of time.

After one shingle **2** has been so applied to a roof member **1**, another similar shingle may be applied in a similar manner except that it overlaps one edge of the already flattened shingle and the larger end of its channel is telescoped over the smaller end of the previously laid shingle. As a result of the flattening of the shingles, the inturned side edge **18** of an overlying shingle presses tightly against the outer surface of the underlying shingle and prevents the ingress of wind and water between the overlapping portions of the two shingles and all the shingles lie flat on the roof member.

The tapering of the channel edges **16** makes it possible to assemble the shingles with roof members of different lengths without cracking the enamel or cutting the shingles. The taper is sufficient to permit a nesting or telescoping of one shingle with another up to as much as about 12" of overlap.

The gable ends **4** are shown in some detail in Figs. 7, 8 and 9. In these figures each gable end consists of sheet metal A covered with vitreous enamel B. Each sheet includes a body portion **20**, a lower channel-shaped end **21** to embrace the lower edge of an underlying shingle **2**, an upper, underturned and reinforced edge **24** and a flange portion **22** which is provided with inturned reinforced edges **23** and which extends down past the ends of roof members **1**. Part **25** of the flange portion **22** is bent inwardly to lie against the channel edge **21** and is preferably welded thereto, as indicated at **26**. It will be understood that the gable ends are made in rights and lefts for the right and left gable ends of the roof. Figs. 7 to 9 show a righthand gable end, the lefthand gable ends being the complements thereof.

When the shingles **2** have been laid on one course of roof members **1**, the gable ends **4** may be assembled therewith by slipping the channel-shaped edge **21** thereof into position embracing the channel portion **16** of the end shingle and with flange portion **22** bearing against the end of the adjacent roof members **1**. Nails **6** are then driven thru holes provided in the flanges **22** to hold the gable ends **5** in assembled position. Then the next course of roof members **1** is laid with the lower edge thereof overlapping the upper end of shingles **2** and gable ends **4**.

The ridge caps of the present invention are shown in some detail in Figures 10 to 13 inclusive. Figs. 10, 11 and 12 show an end ridge cap **8** which consists of a metal sheet A covered with vitreous enamel B. Each sheet includes a body portion **30** and a flange **31**. The edges of the body portion **30** are reinforced by being bent back on the body portion, as at **32** and **32*a***, and the flange **31** is reinforced by being bent back on itself, as at **33**. Flange **31** is split into three portions to permit bending of the body portion to conform to the pitch of the roof on opposite sides of the ridge and to provide a portion **34** to overlie the ridge pole. When the body portion **30** is so bent, the three portions of the flange **31** assume an overlapping position, as shown by the full and dotted lines in Fig. 11, and may be connected to each other as by welding at the point indicated at **35**. It will be understood that the end ridge caps **8** are alike.

Each intermediate ridge cap **7** comprises an enameled sheet metal body portion **36** with inturned reinforced edges **37** and, when bent as shown in Fig. 13, body portion **36** has an intermediate portion **38** to overlie the ridge pole and two inclined sides to lie close to the shingles **2** on either side of the ridge. The caps **7** are bent at such an acute angle that when drawn down by securing means extending thru portions **38** into the ridge the edges **37** will be pressed tightly against the top surfaces of the shingles on each side of the ridge by spring pressure in the cap, thus preventing ingress of water or wind between the caps and underlying shingles.

When the courses of roof members **1**, shingles **2** and gable ends **4** have been laid up to the ridge pole, the ridge caps **7** and **8** are secured in position. Starting near one gable end of the roof the first cap **7** is laid and secured in place as by screws **9**. Then the next one is laid with one side overlapping a previously laid cap **7**. After the intermediate caps have all been so laid, the end caps **8** are laid and secured in position as by screws **9** and nails **6**.

Any suitable enamel may be employed on the coverings **2**, **4**, **7** and **8** and the enamel may have different colors, as desired.

It has also been indicated that the present invention is applicable to building walls other than roofs, for example, side walls. It will be obvious to those skilled in the art that siding, for example of the ship-lap type, may be covered with members corresponding to shingles **2**, and that corners of the building may be covered by members like gable ends **4**. In such cases the ridge caps are not required.

Having thus described my invention so that others skilled in the art may be able to understand and practice the same, I state that what

I desire to secure by Letters Patent is defined in what is claimed.

What is claimed is:

1. A shingle comprising a sheet of metal having a body portion curved on an axis parallel to the lower edge thereof to provide a concave surface to engage a building member, a channel-shaped bottom edge portion parallel to said axis, and a vitreous enamel coating on the surfaces of said sheet which are to be exposed when the shingle is in use.

2. A shingle comprising a sheet of metal having a body portion curved on an axis parallel to the lower edge thereof to provide a convex surface to engage a building member, and a channel shaped bottom edge portion tapering gradually from one side edge to the other edge of the body portion, and a vitreous enamel coating on the surfaces of said sheet which are to be exposed when the covering is in use.

3. A shingle comprising a sheet of metal having a body portion curved on an axis parallel to the lower edge thereof to provide a convex surface to engage a building member, a reinforced side edge, and a channel shaped bottom edge portion tapering gradually from the side edge to the opposite edge of the body portion, and a vitreous enamel coating on the surfaces of said sheet which are to be exposed when the covering is in use.

4. A shingle comprising a sheet of metal having a body portion curved on an axis parallel to the lower edge thereof to provide a convex surface to engage a building member, a reinforced top edge, a reinforced side edge, and a channel shaped bottom edge portion tapering gradually from the reinforced side edge to the opposite edge

of the body portion, and a vitreous enamel coating on the surfaces of said sheet which are to be exposed when the covering is in use.

5. Roof structure comprising a roof member having a flat top surface, a shingle embracing the lower edge of said member and attached at its upper edges to said member and comprising an enameled sheet of metal having a channel-shaped edge portion embracing the lower edge of said roof member, a curved body portion flexed into substantially a plane by engagement of its convex side with the opposed flat surface of said member, and means retaining said shingle and roof member in such assembled relation.

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