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B. C. PLACE

2,201,320

SNOW GUARD

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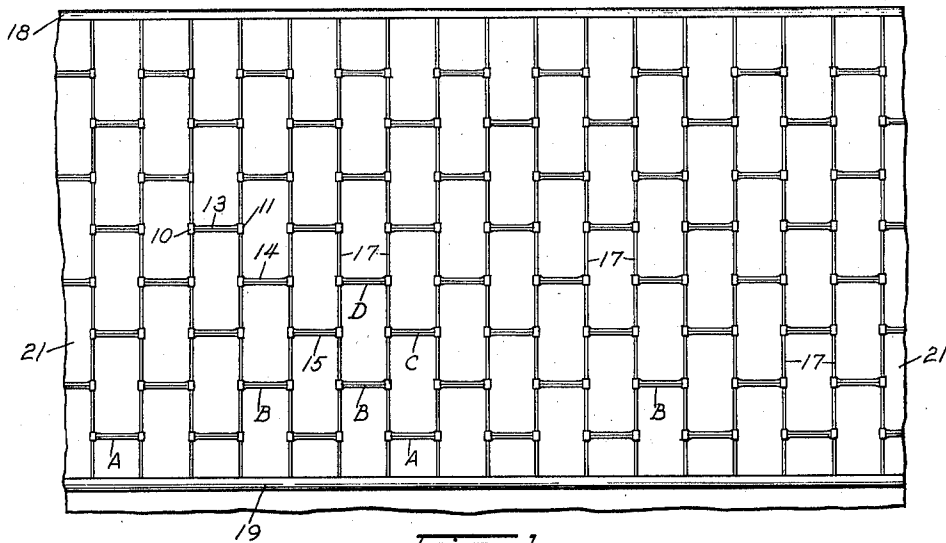


Fig. 1

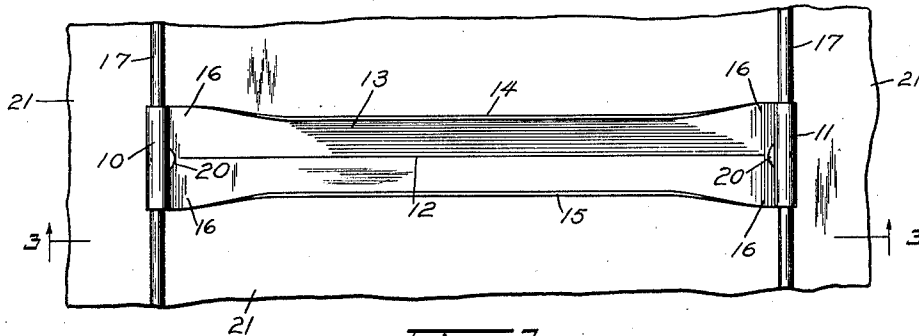


Fig. 2

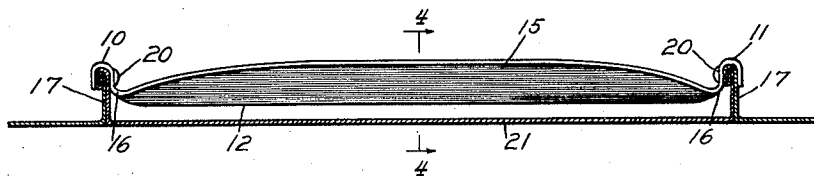


Fig. 3

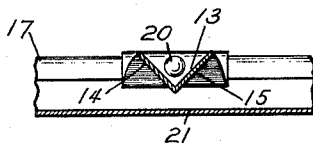


Fig. 4

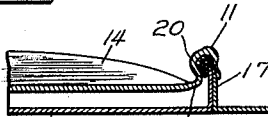


Fig. 5

Inventor

Bion C. Place

By

Strauch & Hoffman

Attorneys

UNITED STATES PATENT OFFICE

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SNOW GUARD

Bion C. Place, Detroit, Mich.

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12 Claims. (Cl. 108—27)

The present invention relates to snow guards designed for ready application to a roof structure to prevent accumulated snow and ice from sliding from the roof in large masses. More particularly, the invention is concerned with a sheet metal snow guard, particularly adopted for ready application to a metal roof having standing seams.

Snow guards have heretofore been proposed to prevent the sliding of masses of snow and ice, accumulated on a roof, from the roof to the danger of persons passing beneath said roof, and to the injury of the eaves trough generally associated with roof structures. However, the snow guards that are available for such purpose are expensive and inadequate to successfully attain the results for which they are provided, because they do not present a sufficient barrier to the sliding movement of the snow and ice in large masses. Furthermore, snow guards available on the market at the present time are not of a nature permitting them to be readily, yet adequately, secured to the roof covering.

The primary purpose of the present invention is to provide a snow guard that may be manufactured at a low cost, and that may readily be securely attached to the roof structure, which snow guard is so constructed as to provide a truly effective barrier to the sliding movement of masses of snow and ice from the roof.

A further object of the invention is to provide a snow guard that may be conveniently applied to adjacent standing seams of a sheet metal roof without injury to the seams, and so constructed as to prevent the sliding of masses of snow and ice from the roof without interfering with the normal flow of water along the roof surfaces between the seams.

This invention also aims to provide an improved roof structure equipped with a multiplicity of snow guards arranged in a manner to effectively serve the purposes for which they are applied to the roof.

A still further object of the invention is to provide an improved mode of attachment of a snow guard to a standing seam of a metal roof, requiring only the distortion of the snow guard and of the standing seam to bring about a firm interlocked engagement between the seam and the snow guard, without penetration of the roof structure.

Further objects of the invention will appear as the description thereof proceeds with reference to the accompanying drawing, in which;

Figure 1 is a fragmentary elevational view of

a roof equipped with snow guards in the at present preferred manner.

Figure 2 is a fragmentary plan view of a portion of the roof on an enlarged scale showing the structure of a single snow guard and the mode of its attachment to adjacent roof seams.

Figure 3 is a sectional view taken on the plane indicated by the line 3—3 in Figure 2, looking in the direction of the arrows.

Figure 4 is a transverse sectional view taken on the plane of 4—4 of Figure 3.

Figure 5 is a detail section through the interlock between seam and snow guard.

Like reference characters indicate like parts throughout the several figures.

The snow guard of the present invention is constructed from an elongated strip of sheet metal of uniform width from end to end, thus permitting the guard to be produced at a low cost. The ends of the strip are bent on transverse lines to provide inverted U-shaped attaching portions 10 and 11, providing channels for the reception of the adjacent standing seams of the roof.

In order to provide an effective barrier preventing the sliding of the snow and ice along the roof surface, the body of the strip is corrugated on a longitudinal line 12 preferably throughout the major part of the mid-portion of the strip, thus stiffening and strengthening said portion. The corrugation provides a channel or gutter 13 extending throughout said part of the strip. In the formation of said gutter 13, walls 14 and 15 are provided, extending preferably at an angle of about 45 degrees to the surface of the roof to which the snow guard is applied. The walls 14 and 15, forming the sides of the trough 13, merge into the plane of the blank adjacent the inverted U-shaped portions 10 or 11 as indicated at 16 (Figure 2). The sheet metal snow guard just described may be produced at low cost, inasmuch as it consists simply in a sheet metal blank which may be die shaped or bent into the form already described. The metal preferred for the formation of the snow guard is copper, though other metal may be used.

The described snow guard is particularly designed for application to a sheet metallic roof having standing seams 17 extending from the ridge 18 to the eaves 19 of the roof. Such roofs are well known in the art and a further description thereof is not necessary.

The snow guard is applied to the roof by mounting the inverted U-shaped portions 10 and 11 on adjacent standing seams 17. Said U-

shaped portions straddling the tops of said seams are clearly illustrated in Figure 3 of the drawing, the snow guard being located at the proper point along the length of the seam. The ends of the guard are interlocked to the seams by crimping the overlapped U-shaped end and seam portions together. This may be accomplished, for example, by pressing a protuberance 20 through the overlapped sheet metallic portions of the seam and the snow guard, as clearly illustrated in Figure 5. When the respective ends of each roof guard are applied to the roof in the manner just described, the snow guards are capable of withstanding substantial weight, bearing against the intermediate portion without bending or without breaking the interlock thus provided.

Preferably the snow guards of the present invention are applied to the roof in the staggered relation clearly illustrated in Figure 1, it being observed by reference to said figure that the snow guards A nearest the eaves of the roof are staggered with respect to the snow guards B arranged higher on the roof, and that the third longitudinal series of guards C are arranged as are the guards A, while a further series D are arranged as are the guards B, and so on through to the eaves of the roof. It will be observed that the snow guards of each series are in endwise alignment, and that the staggering of the guards is uniform, producing a pattern which presents an esthetic appearance to the eye.

It will be observed, with particular reference to Figure 3, that the mid-portion of the snow guard is spaced above the roof sheet 21, providing a space beneath the body of the guard through which water may flow along the roof sheet in the customary manner to the eaves trough usually provided at the eaves of the roof. The snow guards of this invention, accordingly, provide no impediment to the discharge of the water from the roof. It will be observed that any water that accumulates in the trough 13, is discharged upon the roof proper through the portions 16 of the snow guard adjacent the attachment portions 10 and 11.

When snow accumulates on the roof, it will be held upon the roof between adjacent snow guards by abutting against the walls 14 and 15. As the snow retained upon the roof by said walls melts, the resulting water flows beneath the snow guards to the eaves of the roof. It will be readily understood, accordingly, that no substantial mass of snow or ice can slide from the roof, a number of barriers being presented to such sliding movement, which barriers extend without any interruption from end to end of the roof.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of the equivalency of the claims are therefore intended to be embraced therein.

What is claimed and desired to be secured by United States Letters Patent is:

1. A snow guard comprising an elongated sheet metallic strip having its ends bent on transverse lines into inverted U-shape and a mid-portion bent on a longitudinal line to dispose a substantial area of said portion at an angle of at least 45 degrees to the original plane of the strip.

2. A snow guard comprising an elongated sheet metallic strip having its ends formed to straddle adjacent standing seams of a sheet metal roof and to space the mid-portion of said strip above the roof between said seams, said mid-portion of said strip being shaped to give said portion a thickness greatly exceeding the thickness of the strip from which the guard is constructed.

3. A sheet metal snow guard consisting of a sheet metal strip having its ends bent into inverted U-shaped form to straddle adjacent standing seams of a roof and having its mid-portion corrugated longitudinally of the strip.

4. A snow guard consisting of an elongated metallic structure the ends of which are formed to provide transverse channels to receive adjacent standing seams of a sheet metal roof, and the mid-portion of which is shaped to prevent the sliding of a mass of snow accumulated on said roof between said seams while permitting water to freely flow beneath said mid-portion.

5. A snow guard consisting in an elongated sheet metal strip having its ends bent to provide inverted transversely extending channels and a mid-portion bent longitudinally to provide a trough, the sides of said trough merging into the original plane of said strip adjacent said channels.

6. A sheet metal roof having standing seams and equipped to prevent snow and ice sliding therefrom in large masses, consisting of a multiplicity of snow guards, each extending from seam to adjacent seam and having snow impeding portions spaced above the roof between said seams, the snow guards being arranged in widely spaced apart relation from the eaves toward the ridge of the roof.

7. A sheet metal roof having standing seams and equipped to prevent snow and ice sliding therefrom in large masses, consisting of a multiplicity of snow guards, each extending from seam to adjacent seam and having snow impeding portions spaced above the roof between said seams, the snow guards being arranged in widely spaced apart relation from the eaves toward the ridge of the roof and the guards in the channel between any two seams being staggered with respect to the guards in adjacent channels.

8. A sheet metal roof having standing seams and equipped to prevent snow and ice sliding therefrom in large masses, consisting of a multiplicity of snow guards, each extending from seam to adjacent seam and having snow impeding portions spaced above the roof between said seams, the snow guards being clamped at their ends to said standing seams by forming said ends to embrace the seams and causing an interlock by crimping said ends and seam portions together.

9. A sheet metal roof having standing seams and equipped to prevent snow and ice sliding therefrom in large masses, consisting of a multiplicity of snow guards, each extending from seam to adjacent seam and having mid-portions corrugated to provide snow impeding portions, said mid-portions being spaced above the roof between the seams, said snow guards being clamped at their ends to said standing seams by forming said ends to embrace the seams and causing an interlock by crimping said ends and seam portions together.

10. A roof construction including spaced standing seams and a sheet metal snow guard bridging adjacent seams in spaced relation to the roof between said seams, said snow guard having inverted U-shaped ends straddling said seams, por-

tions of said ends and said seams being crimped together to attach said guard to said seams.

5 11. A roof construction including spaced standing seams and a multiplicity of sheet metal snow guards bridging adjacent seams with their mid-portions spaced above the roof surface between said seams, said snow guards being attached at their ends to said seams.

12. A roof seam having a part of a snow guard attached thereto and comprising an inverted U-shaped portion of the snow guard snugly embracing said seam, and an indentation pressed transversely into said seam and into said portion to 5 connect the guard to the seam without penetration of the seam or guard part.

BION C. PLACE.