United States Patent

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[54] **SHEET CONSTRUCTION MATERIAL WITH BAFFLELIKE MEMBERS AT JOINTS**
4 Claims, 5 Drawing Figs.

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[51] Int. Cl. **E04h 14/00,** E04d 13/00
[50] Field of Search ..... 52/173, 24—26, 461, 465—467

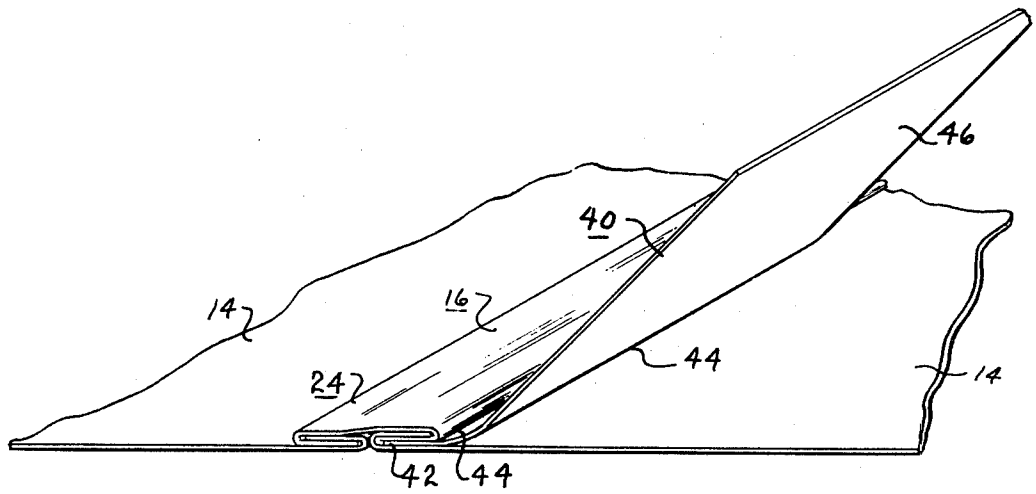
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ABSTRACT: A sheet metal construction material for trailers, mobile homes and the like in which baffles are placed in spaced relation on the external surface in order to control the wind currents over the surface of the material and thereby eliminate or minimize the sound created by flexing of the installed material. A baffle may also be placed on the inner side of the material to give rigidity or support to the roofing material.



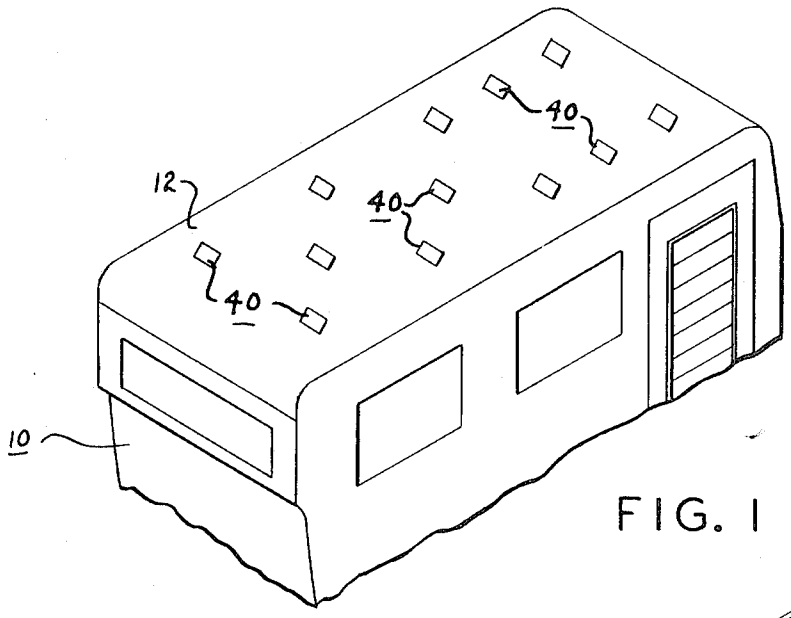


FIG. 1

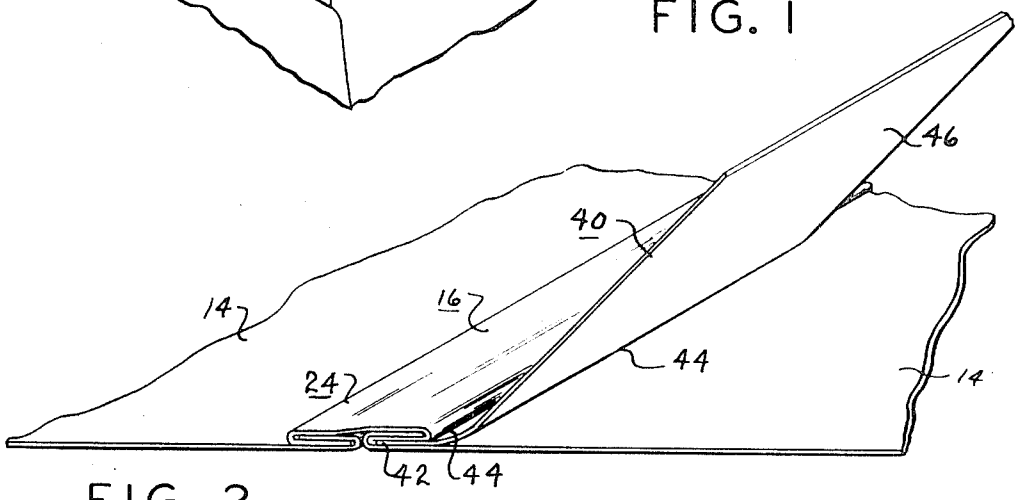


FIG. 2

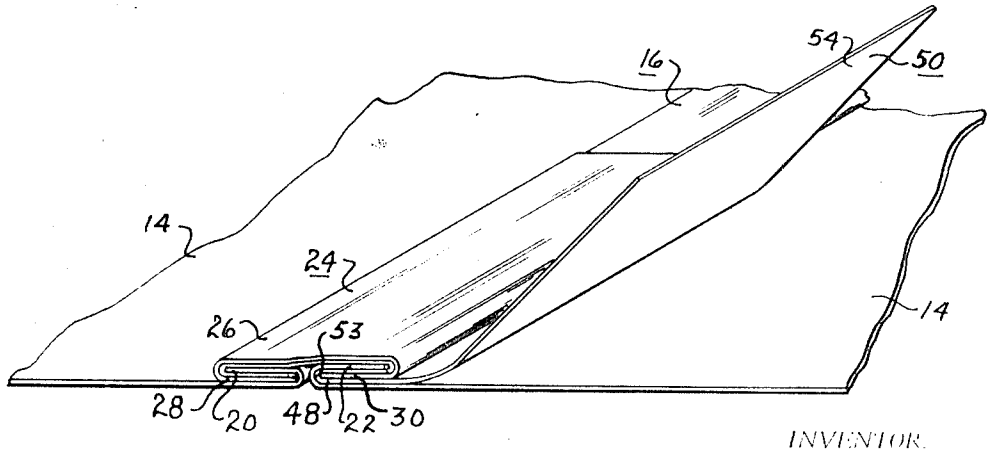


FIG. 3

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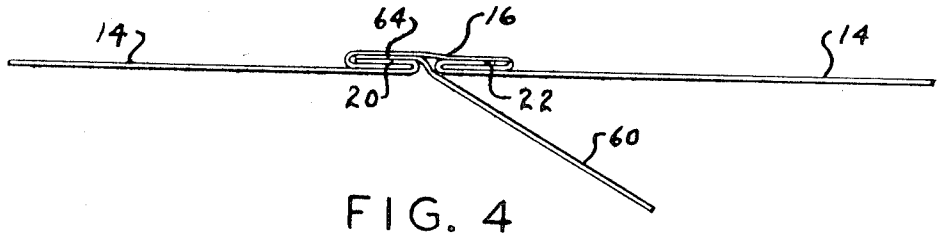


FIG. 4

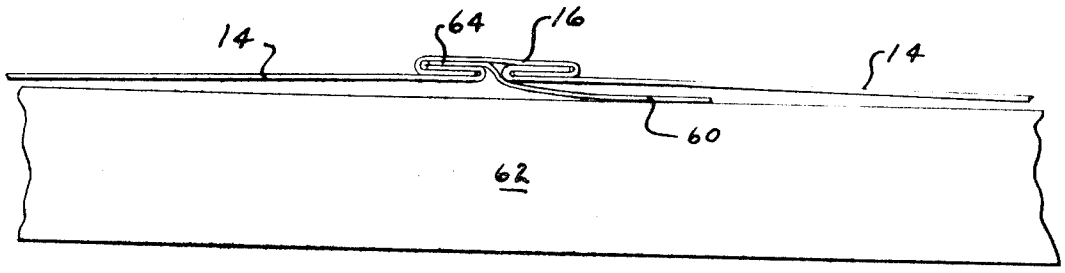


FIG. 5

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SHEET CONSTRUCTION MATERIAL WITH BAFFLELIKE MEMBERS AT JOINTS

Sheet metal material is often used on the roofing and siding of trailers and mobile homes, and this material may be either wide single sheet material or a fabricated type in which wide sheets of the material are formed by a series of strips connected to one another by sealed joints. When the material is installed on the vehicle, it is normally uncoiled from a roll and placed on the roof, for example, from one end of the vehicle to the other and from one side to the other as a single sheet. In order to prevent leaking, the material is secured only at the edges, leaving the entire center portion unsecured and merely resting on the structural for member or sheeting of the roof. Since the metal roofing material is relatively stiff, it often is partially self-supporting so that it will not lie flat against the frame or sheeting and will tend to flex outwardly and inwardly with variations in air pressure created primarily by the wind, producing a frequent or constant noise easily audible within the living space of the vehicle. In the past, the occupants of mobile homes and trailers have endeavored to overcome this difficulty and eliminate the noise by covering the roof with sand, dirt or gravel or other heavy objects or material. This method has not only been inconvenient and ineffective, but has occasionally caused damage to the supporting structure by the excess weight on the frame members which were not designed to support the heavy loads. It is therefore one of the principal objects of the invention to provide a roofing material of the aforementioned type which includes means for eliminating or minimizing the effect of wind pressures on the material, thereby eliminating or minimizing the noise caused by flexing of the material.

Another object of the invention is to provide a means for controlling the flow of air over the surface of sheet metal roofing material, which can be adjusted after the material has been installed to give the optimum effect to the elimination of flexing and vibration of the material and which does not interfere with normal handling and installing practices.

A further object of the invention is to provide a means which minimizes the noise of the aforementioned type of roofing material in the wind by deadening the material so that flexing of the installed material creates little or no sound, and which can be incorporated in the roofing material during normal fabrication thereof.

Still another object is to provide an attachment to sheet metal roofing material which may project outwardly to control the air currents over the roof and/or which may give support to the sheet material in areas in which the material is not in direct contact with the frame member or sheeting of the roof.

Additional objects and advantages of the invention will become apparent from the following description and accompanying drawings, wherein:

FIG. 1 is a perspective view of a mobile home or trailer having roofing material thereon embodying the present invention;

FIG. 2 is an enlarged fragmentary perspective view of the roofing material shown in FIG. 1;

FIG. 3 is an enlarged fragmentary view similar to that shown in FIG. 2 illustrating a modified form of the present invention;

FIG. 4 is an enlarged fragmentary cross-sectional view showing a further modified form of the present invention illustrating the roofing material before it has been applied to the vehicle structure; and

FIG. 5 is a cross-sectional view similar to that shown in FIG. 4, but showing the roofing material applied to the vehicle structure.

Referring more specifically to the drawings and to FIG. 1 in particular, numeral 10 indicates generally a trailer, mobile home or other vehicle having the present roofing identified by numeral 12, installed thereon. The roofing shown is a large section covering the entire roof of the vehicle and is of a fabricated type using a number of strips 14 of sheet metal in parallel, side-by-side arrangement joined together by a series of joints therebetween, indicated by numeral 16. The sheet material sections consist of standard sheets preferably of 28 or 30 inch widths of 12 to 20 gauge material, and the width and gauge may vary from one panel to another, depending upon the intended installation of the final panel. The sheet material is normally of standard galvanized material supplied in large rolls, from which sections of the desired length to produce the required width of panel are severed.

The joints 16 used in securing sections 14 together in the manner shown in FIGS. 2 and 3 consist of flanges 20 and 22 turned into a U-shaped form to overlap the adjacent side of the respective section 14. The free edge of flanges 20 and 22 are preferably initially spaced from the body portion of sections 14 a substantial distance in order to permit assembly of the joints. The edges of panels 14 are placed side by side, preferably substantially together, and a slip cap 24, having a back 26 and two inwardly extending flanges 28 and 30, is slipped longitudinally along flanges 20 and 22 with flanges 28 and 30 being positioned between the flanges on the panel sections and the main body portion of the panel sections. After the slip cap has been assembled, the joint is rolled or otherwise pressed, bending the two flanges together and against the respective portions of the panel sections and slip cap, resulting in a firmly interlocked structure securely held together by the slip cap. When the joint has been formed in the foregoing manner, the two panel sections are rigidly held together and prevented from slipping or otherwise moving either longitudinally or transversely in the joint relative to one another. A sealing material between the ends of the two sections and within the folds of the joint renders the joint completely watertight, even though the joint may be deformed during installation.

The present sheet material is provided with a number of baffle members 40 attached to the panel at the joint. In the embodiment illustrated in FIG. 2, each baffle member is provided with a flange 42 which extends into the joint between the cap 24 and the adjacent panel section 14. Sealing material 44 is preferably disposed along the flange between the flange and cap 24 and along the point of juncture between the baffle member and section 14, the sealing material being preferably sufficiently firm once it has set to assist in retaining the baffle 40 in place. After the roofing material has been installed on the trailer or mobile home, the baffle portion 46 may be bent to various angles relative to the roofing panel and may be bent angularly on a plane transverse to the plane of the roofing panel. The baffles are spaced along joints 16 sufficiently close to one another that the air currents across the roofing can be deflected and hence controlled to minimize the effect of the wind on the panel.

In the use of the present roofing material, after it has been installed on the trailer or mobile home in the manner illustrated in FIG. 1, the baffles 46 are bent, distorted, and twisted to obtain the desired airflow across the surface of the panel. The prevailing wind in any particular location is normally taken into consideration so that the most effective baffling of the air currents can be obtained. The angular position of the baffles, with respect to the surface of the panels, can be used to eliminate or minimize the depression in pressure normally created by the flow of wind, particularly in gusts, horizontally across the surface of the panel. The pressure on the inner and outer sides of the panel may be equalized or the differential substantially reduced so that flexing of the panel under most normal conditions will not occur.

In the embodiment of the invention illustrated in FIG. 3, the flange 48 of baffle member 50 is secured to the cap 24 by folding the flange inwardly at numeral 53, forming a configuration substantially the same as the cap, with the free edge of the flange extending inwardly on the opposite side from the baffle portion 54. A sealing material is used in the joint in the same manner as that described with reference to the embodiment shown in FIG. 2. The structure embodying the modification illustrated in FIG. 3 is used in the same manner as that shown in FIG. 1 after it has been installed on the trailer or mobile home, i.e., the baffle member 50 is bent, distorted and/or twisted to obtain the desired airflow currents over the panel surface.

A further modified form, and/or addition to the embodiments disclosed in FIGS. 2 and 3, is illustrated in FIGS. 4 and 5. In the latter embodiment, a bafflelike structure 60, similar to that shown in the preceding figures, is secured to the underside of the panel, projecting downwardly therefrom to contact the roofing frame or sheeting 62. The flange 64 of baffle member 60 is inserted in the joint between the cap and one of the U-shaped flanges 20 or 22 on the sheet sections. The baffle members 60 are constructed of sufficiently resilient material that, after being pressed inwardly or downwardly they will endeavor to return to their original position. When the panel is placed on the roofing frame or sheeting, the baffle members 60 engage the structure and place an outward tension on the roofing panel which holds the roofing panel taut preventing it from flexing in response to variations of the differential in pressure between the internal and external sides of the panel. This baffle 60 may be used alone or in combination with either baffles 40 or 50, and they may be joined to the panel by various other means than that illustrated in FIGS. 4 and 5.

The baffles illustrated in the drawings are normally secured to the panel at the time the panel is fabricated, and they may be coiled along with the material, and when the material is uncoiled from the roll and placed on the vehicle, the baffles 40 and 50 may remain in a position substantially parallel to the roofing surface until they are raised to the proper angle to obtain the desired air currents along the surface of the roofing panel. The reforming operation of the baffles is normally performed after the trailer or mobile home has been parked in a place where it will remain for a substantial period of time.

While the baffles are normally constructed of metal such as steel or aluminum, they may be plastic or other rigid material, and they may be used in connection with aluminum roofing material or other kinds of roofing material besides metal. Only three embodiments of the present roofing structure have been described in detail herein; however, various other changes and modifications may be made without departing from the scope of the invention.

I claim:

1. Sheet construction material for trailers, mobile homes and like vehicles, comprising a panel of material for attachment to the vehicle structure, said panel constructed of a plurality of parallel sections and a plurality of yieldable bafflelike members secured to one side of said panel and located on said panel in spaced relation to one another, in which a joint used to secure the sections together consists of a U-shaped flange on adjacent edges of the section and a cap having inwardly turned flanges interlocking with the flanges on said sections, and in which said bafflelike members have a flange near their inner edge extending inwardly into the joint between said cap and one of the sections.

2. A sheet construction material as defined in claim 1 in which said bafflelike members are mounted on the external surface of said panel.

3. Sheet construction material for trailers, mobile homes and like vehicles comprising a panel of said material for attachment to the vehicle structure, said panel constructed of a plurality of parallel sections, and a plurality of yieldable bafflelike members secured to one side of said panel and located on said panel in spaced relation to one another in which a joint used to secure the sections together consists of a U-shaped flange on adjacent edges of the sections and a cap having inwardly turned flanges interlocking with the flanges on said sections, and in which a flange on the inner edge of each of said bafflelike members extends across said cap and extends thereunder between the sections on opposite sides of said cap.

4. Sheet material for trailers, mobile homes and like vehicles, comprising a panel of said material for attachment to the vehicle structure, said panel constructed of a plurality of parallel sections and a plurality of yieldable bafflelike members secured to one side of said panel and located on said panel in spaced relation to one another, in which a joint used to secure the sections together consists of a U-shaped flange on adjacent edges of the sections and a cap having inwardly turned flanges interlocking with the flanges on said sections, and in which said bafflelike members are secured to the inner side of the panel at the joints of said sections.