Sept. 12, 1961 W. H. SPENCER ET AL 2,999,278

INSULATION MOUNTING

Original Filed Aug. 29, 1955

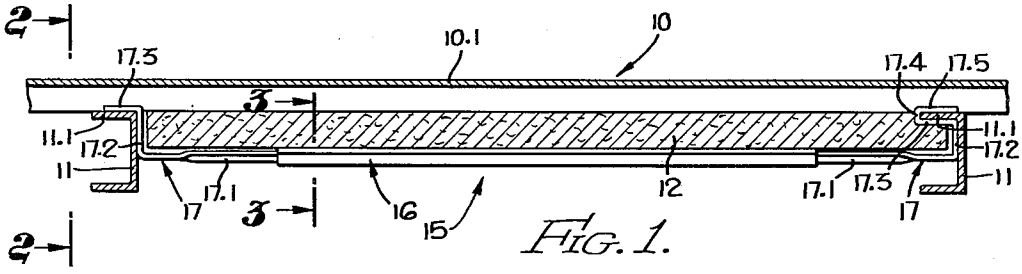


FIG. 1.

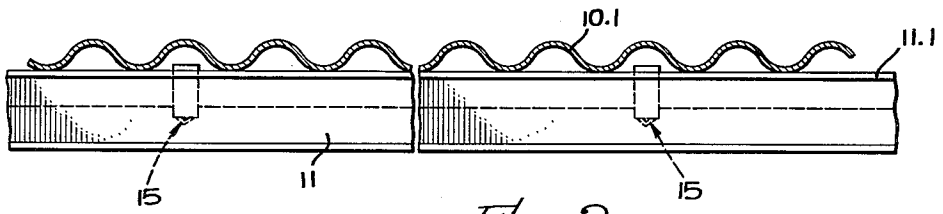


FIG. 2.

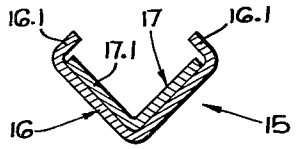


FIG. 3.

FIG. 4.

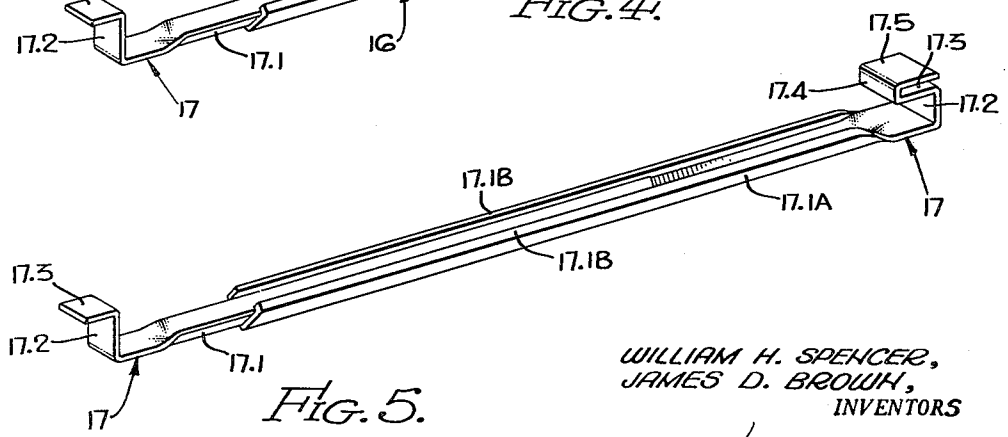


FIG. 5.

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United States Patent Office 2,999,278 Patented Sept. 12, 1961

2,999,278

INSULATION MOUNTING

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Continuation of application Ser. No. 531,220, Aug. 29, 1955. This application Jan. 21, 1959, Ser. No. 788,235

9 Claims. (Cl. 20—4)

The present invention relates generally to insulation mounting and particularly to an easily positioned insulation mounting requiring no special tools or implements for its installation. More specifically the invention relates to a mounting designed for the retention of sound and heat absorbing insulation adjacent a surface, particularly a roof surface, and which is particularly adapted to be mounted between wall and roof supporting purlins varying in spacing.

Sound and heat insulation materials are commercially available in granular, solid and fiber forms and are conventionally positioned against or relatively close to a wall or roof surface. A common and well-known place of use is upon the underside of a roof or decking where it is able to perform a double function, first preventing the passage of exterior heat into the enclosure and secondly preventing the reflection of sound waves traveling within the interior of the enclosure. A roof or deck may be a flat wooden element or it may be a corrugated sheet metal member, supported, in either instance, by spaced purlins, joists, or beams. The insulation in continuous strips may run between and parallel to the supporting purlins, and may either contact or be spaced slightly from the inner surface of the roof or deck. Where the roof or deck is of metal the supporting function is preferably accomplished, according to the present invention, by manually positioned bracket elements engaged at their opposite ends with the purlins. The purlins may vary in spacing and accordingly it is desirable that the brackets be longitudinally adjustable as to adapt themselves to this variation.

The present invention comprises an improvement upon the construction disclosed and claimed in co-pending application of applicants identified as Serial No. 367,932, entitled Insulation Mounting and now abandoned. The present application is a continuation of our co-pending application for United States Letters Patent Serial No. 531,220, filed August 29, 1955, for Insulation Mounting and now abandoned..

Referring now to the drawing in which preferred embodiments of the present invention are illustrated:

FIGURE 1 is a partial section through a roof illustrating insulation supported below the roofing by a bracket member constructed in accordance with the present invention;

FIGURE 2 is a view looking in the direction of the arrows upon the line 2—2 of FIGURE 1;

FIGURE 3 is a transverse section through the bracket upon the line 3—3 of FIGURE 1;

FIGURE 4 is a view in perspective of the bracket alone; and

FIGURE 5 is a view similar to FIGURE 4 showing a bracket constructed in accordance with a second preferred embodiment of the invention.

Referring again to the drawing, and to FIGURES 1 to 4, inclusive, in particular, the first preferred embodiment of the invention is illustrated. A section of roof is indicated generally by the reference character 10 and is seen to comprise a corrugated sheet roofing 10.1 supported by spaced longitudinally extending U-sectioned purlins 11 extending transversely of the corrugations of the roofing. The downwardly convex or valley portions of the roofing 10.1 rest directly upon the purlins although the relationship is such that there is frequently space therebetween, either present or readily obtainable by the exertion of a slight lifting force on the roofing. The upwardly convex portions of the roofing are, as is most readily seen in FIGURE 2, spaced from the upper flange 11.1 of the purlins. The insulation, indicated by the reference character 12, extends between the purlins 11. Its length depends upon the run to be covered and it is to be understood that a single continuous length or a plurality of abutting lengths of insulation 12 may be used. Insulation 12 may be of any common and well-known type and it has been found that an ultra-light bracket-type insulation such as fiberglass batting is entirely suitable although, it is to be understood, the invention is not limited to a particular type of insulation. It would be possible to make use of insulation batting of material other than fiberglass, and it is within the scope of the invention that the insulation 12 should be relatively inflexible solid members rather than flexible batting.

The insulation 12 must be retained in position below the roofing 10.1 and to accomplish this result there are provided brackets, indicated generally by the reference character 15, positioned at spaced intervals along the length of the insulation 12 and extended between the purlins 11. The exact spacing of the brackets 15 is not of the essence and will depend in part upon the flexibility of the insulation 12 determining the requirement for support to prevent sagging. Bracket 15 is seen to comprise an elongated central run 16 which is generally V-shaped in section, as illustrated in FIGURE 3, with inturned overhanging flanges 16.1 at the outer sides of the V. End members 17 are positioned at the opposite ends of the central run 16 and include longitudinal extensions or runs 17.1 sectioned similarly to the central run 16, except for the inturned flanges 16.1, and adapted to seat therein as illustrated in FIGURE 3. End members 17 also have right-angled transverse runs 17.2 which terminate in flanges 17.3 which extend parallel to the longitudinal extensions 17.1 and to the central run 16. As is seen most clearly in FIGURE 4, the longitudinal runs or extensions 17.1 seat slidably in central run 16 and have a length which enables each member 17 to be adjusted longitudinally relative to central run 16 within a range of about six to ten inches. The flanges 17.3 of the members 17 extend in the same direction which means that with respect to the central run 16 one flange 17.3 is turned outwardly while at the opposite end its counterpart is turned inwardly. This is seen most clearly in FIGURE 4. A second and overlying flange 17.5 is carried by the short run 17.4 and extends parallel to and adjacent the inturned flange 17.3, the two flanges 17.3 and 17.5 forming a U of a size adapted to receive and seat the top flange 11.1 of a purlin in the manner illustrated clearly in FIGURE 1. It will also be apparent from the drawing that the right hand end of member 17.1 may be aptly described in its entirety as of S-shape. The larger lower portion of the S embraces and seats over one edge of sheet material 12 while the smaller upper portion of the S frictionally embraces flange 11.1 of purlin 11. The outer flange 17.5 is spaced the same distance from the plane of the central run 16 as is the flange 17.3 at the opposite end which means, of course, that both ends of the bracket are spaced the same distance from the purlin.

The mounting of the insulation and the supporting bracket constructed in accordance with this first embodiment of the invention is simple. Insulation 12 is held flat against the underside of the roof 10 and the right hand end of the bracket 15, as viewed in FIGURES 1 and 4, is positioned by seating the purlin upper flange 11.1 in the U seat formed between the horizontal flanges 17.3 and 17.5. The opposite end of the bracket unit is then

adjusted relative to the seated end by sliding the longitudinal runs 17.1 relative to the central run 16 until the proper length is obtained and the flange 17.3 overlies the adjacent purlin top flange 11.1 in the manner illustrated in FIGURE 1. As the runs 17.1 of the end members 17 seat slidably but frictionally within the central runs 16 when once positioned they retain their longitudinal adjustment in the absence of a positive adjusting force. With the bracket so positioned the batting 12 is supported by the central run 16 and the longitudinal run 17.1. Successive brackets 15 are then positioned along the length of the insulation at spaced intervals as required, the positioning operation being identical in each instance.

Referring now to FIGURE 5 in particular, a second preferred embodiment of the invention is illustrated. This form is to be understood as being identical to the first described embodiment except as specified. In this embodiment a bracket is a two-piece unit rather than a three-piece as in the first embodiment. The left-hand end member 17 is identical to that of the first described embodiment with the exception that the longitudinal run 17.1 is extended and has a length which is somewhat greater than half the length of the bracket when fully expanded. The right-hand member 17 is also identical to the right-hand end member of the first embodiment with the exception that longitudinal run 17.1 of the first embodiment has been replaced by a longitudinal run 17.1A having a section identical to that of the central run 16 of the first embodiment. Stated differently, the right-hand end member 17 now embodies the central run 16 of the first embodiment as an integral part as its longitudinal run 17.1A. The elongated run 17.1A is V-sectioned like the run 16 of the first embodiment and has inturned upper flanges indicated at 17.1B. Additionally, the male run 17.1 is frictionally slidable within the female member 17.1B so that the two parts remain in an adjusted longitudinal position after having been once so positioned.

The positioning and adjustment of this second embodiment of the invention is similar to that first described with the exception that the entire movement and the longitudinal adjustment takes place between the two longitudinal runs 17.1 and 17.1A rather than between the three parts 17.1, 16 and 17.1 as in the first embodiment.

While the particular apparatus here shown and disclosed in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of the presently preferred embodiments of the invention and that no limitations are intended to the details of construction or design herein shown other than as defined in the appended claims.

We claim:

1. In an insulation mounting of the type adapted to support an elongated body of insulation below a roofing and between spaced purlins having laterally extending flanges, a relatively narrow elongated bracket including an elongated central run adapted to extend under and support said insulation, end members telescopically assembled to said central run, lateral runs at the outer ends of said longitudinal runs extended therefrom upon one side, an outwardly extending supporting flange carried by the lateral run of one of said end members adapted to overlie and be supported by a purlin flange, an inwardly extended flange carried by the lateral run of the end member at the opposite end of said central run, a supporting flange extended parallel to said inwardly extended flange and connected thereto by a connecting run extended parallel to said lateral run of said end member, and said connecting run forming with the flanges to which it connects a U-sectioned seat adapted to receive a purlin flange, said bracket being unsupported between said lateral runs.

2. In combination, a sheet of insulating material, a pair of spaced parallel building support elements extending along the lateral edges of said insulating material, a relatively narrow elongated bracket for supporting said material from said elements, said bracket having an elongated central run adapted to extend crosswise of the underside of said sheet, end members at the opposite ends of said central run including longitudinal runs slidingly connected to the ends of said central run and also including lateral runs at their outer ends extended across the edges of said sheet, said lateral runs terminating in supporting flanges extended longitudinally and parallel to said central run and adapted for insertion, respectively, between said support element and associated components of a building, characterized in that at one end of said bracket the supporting flange extends parallel to and within the limits of its longitudinal run while at the opposite end the flange extends outwardly and away from its own longitudinal run.

3. In combination with a building having a plurality of spaced apart parallel flanged purlins, a roof covering secured to the outer edges of said purlins, an insulation mounting of the type adapted to support an elongated body of insulation below previously erected portions of said roofing and between said purlins, elongated relatively narrow brackets each having longitudinal runs telescopically engaged, one of said runs being formed as an end member having a lateral run terminating in a flange extended parallel to its longitudinal run, and another of said longitudinal runs terminating in an end member formed with a lateral run terminating in a U-sectioned flange unit seated over and frictionally engaging the flange of one of said purlins, the effective length of said bracket being variable upon telescopic adjustment of said longitudinal runs, said U-sectioned flange unit being positioned within the length of the longitudinal run to which it connects.

4. The construction recited in claim 3 characterized in that said longitudinal runs are V-sectioned and in that the outer edges of the V of the exterior runs are formed with inwardly extending flanges to retain an interior run seated therein.

5. An article of manufacture comprising a bracket suitable for supporting sheet insulating material between a series of channel-shaped purlins having the web portions thereof in parallel vertical planes and their flanges projecting in the same direction from the upper and lower edges of said web of each purlin, said bracket comprising a plurality of elongated members slidably assembled in the telescopic relation and having wide flat ends, one of said bracket ends being L-shaped with one leg extending vertically to lie along the exterior side of one of said purlin webs and the other leg of said L-shaped end being adapted to rest on top of the same purlin flange, the other of said bracket ends terminating in a U-shaped portion adapted to clip over the free edge of the flange of a second purlin to thereby support the main body of said bracket from a pair of spaced purlins and providing a rigid underlying support for a sheet of insulating material, one of said elongated members being generally V-shaped in cross-section with the edges of the V-legs turned inwardly toward one another, a second one of said elongated members being V-shaped in cross-section and of such size as to be slidable within the V-shaped channel of said first-mentioned member and held against lateral displacement therefrom by the inturned edges thereof.

6. In combination with a building framework of the type having an outer covering secured to the exterior longitudinal edges of a plurality of spaced-apart parallel flanged purlins, that improvement which comprises a plurality of similar brackets for supporting sheet material inwardly of said outer covering and between said spaced apart purlins, said brackets each comprising a plurality of strips of relatively thin sheet metal having their midportions telescopically assembled, the outer end of one of said strips having an S-shaped clip-like portion the facing

interior surfaces of one portion of which frictionally engage over a laterally projecting flange of one of said purlins, the outer end of another of said strips of each bracket having an L-shaped end one leg of which rests on the laterally extending flange of the adjacent purlin with the other leg extending substantially at right angles thereto and lying closely beside the purlin web, the portion of said bracket between said last-mentioned leg and said end with the S-shaped clip underlying and supporting sheet material positioned between adjacent purlins with the lateral edges of said sheet material positioned closely adjacent the juxtaposed webs of said purlins.

7. The combination defined in claim 6 wherein the opposite lateral edges of the said sheet material supported on the offset portion of said bracket cooperates with portions of the bracket ends lying thereagainst to hold said bracket locked in an extended purlin-engaging position.

8. The combination defined in claim 6 wherein the major portion of the bracket strips lying between the purlin-engaging ends thereof is deformed to lie in different intersecting planes to reinforce said strips against lateral deformation.

9. In combination with a building framework having an exterior covering supported by a plurality of spaced-apart parallel flanged purlins, that improvement which

comprises a plurality of brackets supporting sheet material inwardly of said exterior covering and between said spaced-apart purlins, said brackets each comprising a plurality of elongated elements having their adjacent ends held telescopically assembled in overlapping relation, the outer end of one of said strips having an S-shaped clip-like portion the facing interior surfaces one portion of which frictionally embraces the edge of said sheet material and the other portion of which engages over a laterally projecting flange of one of said purlins, the outer end of another of said elongated elements having an L-shaped end one leg of which rests on the laterally extending flange of the adjacent purlin with the other leg extending substantially at right angles thereto to lie beside the purlin web.

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