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METHOD OF ATTACHING MATS

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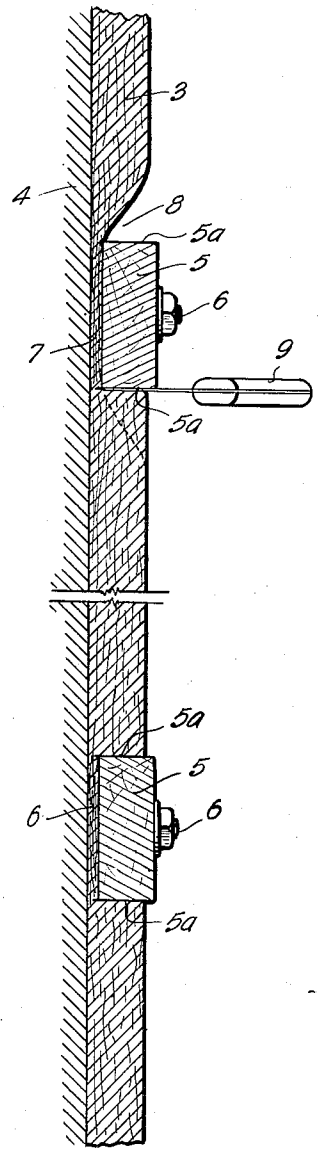


Fig. 1.

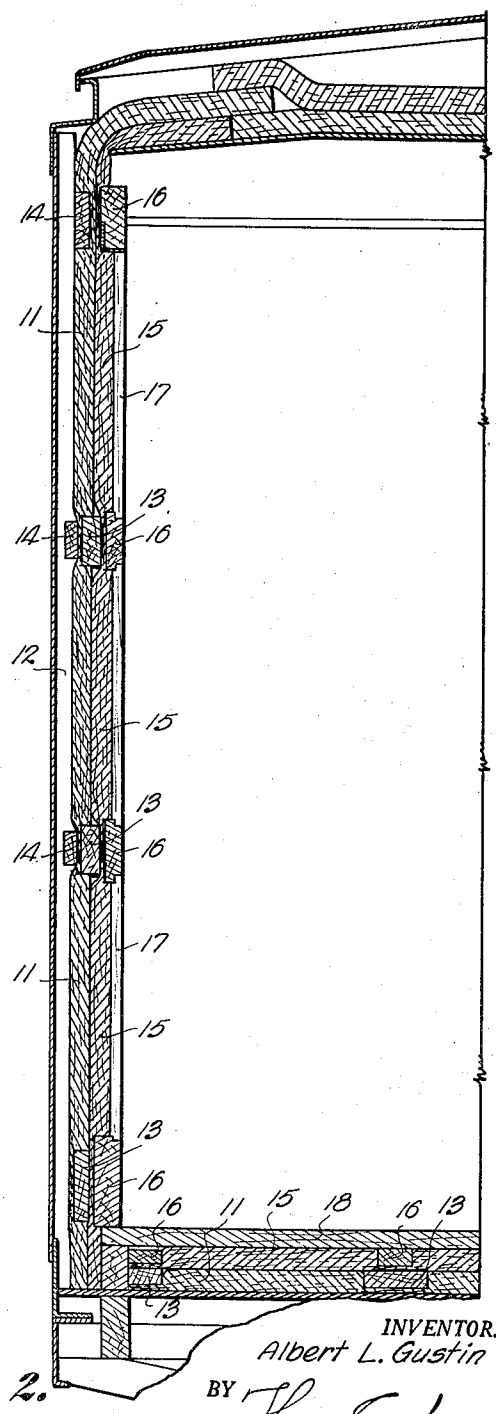


Fig. 2.

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METHOD OF ATTACHING MATS

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This invention relates to the application of resilient compressible mats to walls or other surfaces, and refers more particularly to a method of applying resilient compressible mat which will insure better insulative properties adjacent the fastening means.

A large proportion of the insulating material conventionally applied to walls and similar surfaces is in the form of resilient compressible mat, having a bonded fibrous or sponge-like structure. The purpose of this structure is to provide a medium through which acoustical or thermal transfer is eliminated or reduced to a minimum, and the most favorable results are obtained by having the material of considerable thickness at all points where optimal insulation is desired. However, the inherent nature of the material, in its resilience and usually sponge-like state, causes it to be compressed beneath whatever fastening means are used to attach it securely to a surface. This compression of the material adjacent the fastening means, usually battens or fasteners with appreciable contact surface, results in a loss of the natural thickness of the acoustical or thermal resistant medium at that point and hence a substantial impairment of the insulative properties.

It can be seen that there is a need for a more uniform insulation surface, and it is desirable therefore that a method of applying resilient compressible mat be provided in which this obvious disadvantage of the loss of insulation at the fastening means be overcome.

For this reason, it is an object of my invention to provide a method of application of resilient compressible mat in which a maximum of insulative effect may be obtained adjacent the means which are used to secure the mat to a surface. A feature in connection therewith is the slitting of the surface of the compressed mat adjacent the edges of the fastening means to allow the mat to decompress and provide a normal thickness at that point.

It is often desirable that mat of the nature described be applied to a surface in a plurality of layers, in which case the successive mats are applied with similar fastening means. However, it is frequently found that, due to the nature of the surface to which the mat is applied, it is necessary to attach each layer of mat to the preceding layer and to the under surface with fastening means which must be aligned one above the other for attachment to the same member. This is especially true in the case where the mat is applied to a wall of steel or

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other metal, as in the example of a railway car, wherein members of wood or softer composition have been prefixed to the metal surface at intervals to provide a receptive surface for the fastening means of the mat. In such cases as those described the alignment of compressed mat surfaces adjacent the battens or other means again defeats the purpose of mat thickness for insulation and results in an impaired insulation surface at those points.

It is a further object of my invention, therefore, to provide a method of applying a plurality of successive layers of resilient compressible mat to a surface in which a minimum loss of insulative effect is attained adjacent the attachment surfaces of the successive layers. A feature in connection therewith is the slitting of the compressed mat surfaces adjacent each fastening means to allow decompression of the mat at that point to its normal thickness.

Other and further objects will appear in the course of the following description. In the accompanying drawings which form a part of the instant specification and are to be read in conjunction therewith, and in which like reference numerals are used to indicate like parts in the various views,

Fig. 1 is a vertical section through a surface to which a resilient compressible mat has been applied according to the method of this invention, and

Fig. 2 is a fragmentary vertical section through the walls of a railway car to which successive layers of resilient compressible mat have been applied embodying the method of this invention.

My invention may readily be appreciated from Fig. 1 which shows an insulating mat 3 fastened to a wall or similar surface 4 by laterally spaced parallel batten strips 5, each strip being secured to the wall by bolts 6 spaced along its length which serve to draw the strip toward the wall compressing and clamping the mat as shown at 7. The mat is of resilient material, for example, vegetable and/or mineral fibers bonded by a resin at their junctions to integrate them into a unitary springy mat structure having a labyrinth of open interstices.

In clamping a mat of this character to the wall at intervals with battens, it will be noted that the mat is compressed not only in the region directly under each batten but also to a lesser degree in the regions immediately adjacent the sides of the batten. The insulative value of the mat in the compressed region 7 ob-

viously is less than at the points where it is unrestrained and of full thickness, but this loss and its insulating properties is somewhat offset by the insulating effect offered by the batten 5 superimposed over this region. However, the compressed regions immediately adjacent the batten form an open air space or notch 8, so here there is a loss of insulating effect without any corresponding gain whatever through the agency of an auxiliary covering.

The salient novelty of my invention resides in recovery of the loss of insulating effect represented by the open notch 8 along the margins of the securing member. This I accomplish simply by placing the blade of a knife 9 or other sharp cutting instrument flat against first one marginal edge 5a of the batten and then against the other, and in each case drawing the knife along the batten to cut a slit in the mat on either side of the compressed region 7. By so doing it will be seen that I sever the fibers extending from the compressed region 7 across the plane of edge 5a so that the severed portions lying out from under the batten are permitted to spring back up to their unrestrained position. The slit naturally must not extend all the way through the mat but must be deep enough to permit decompression of the mat beside the batten substantially to full, unrestrained thickness. In this fashion the notches 8 are eliminated and full insulating value of the mat is obtained close to the battens as well as farther away. The finished assembly also has a much neater appearance than before. The lower batten 5 in Fig. 1 shows the appearance of the mat after being treated in accordance with my method; the lower edge of the upper edge of the batten shows the treatment in process, while the upper edge illustrates the conformation of the mat prior to slitting.

Fig. 2 illustrates the application of the foregoing method to the insulation of a railroad car wherein two thicknesses or layers of mat are employed. The first layer 11 is positioned against the inner walls 12, and against this layer of mat are placed battens 13, beneath which the mat is compressed, the battens and compressed mat being secured to the car-wall side members 14. A cutting instrument is then inserted with its blade surface flush with the batten edges, and the compressed mat adjacent the battens is slit to a depth which will allow the mat to decompress at the batten edges to its normal thickness as described hereinbefore.

The second layer of mat 15 is now placed over the first layer, and other battens 16 are positioned over the battens 13 of the preceding layer. The mat is compressed beneath the batten and the batten and mat are similarly secured to the members 13 beneath the batten and the batten and mat are similarly secured to the members 13 beneath the mat. Now the compressed mat adjacent the batten edges is slit, as before, to allow the decompression of the mat along the length of the batten. Repeating this operation with each succeeding layer of mat applied provides a minimum of compressed mat surfaces at the edges where the mats are fastened, thereby presenting a more normal insulating structure adjacent the fastening means and hence a resultant better insulation at that point. Over the last layer of mat it is contemplated that a panel of wood 17 may be placed to offer a more durable inner wall surface for the car. The same method of application may be used for the mat which is applied under the floor surface 18 of the car.

It should be understood that the foregoing illustration of the application of thermal or acoustical insulation mat to railway cars is merely exemplary and should in no way be construed as limiting the invention, as it will be seen that it may apply to all forms of resilient compressible mat in their application to any surfaces for insulative or other purposes.

From the foregoing it will be seen that my invention is well adapted to attain the ends and objects hereinbefore set forth together with other advantages which are obvious and which are inherent to the invention.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

Inasmuch as many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. The method of supporting a resilient, compressible mat which comprises clamping and compressing the mat at spaced intervals between fixed fastening members positioned against opposite faces of the mat, and slitting the compressed mat partially therethrough along the margin of one of the fastening members adjacent one of said intervals to permit the mat adjacent said one member to decompress to substantially its normal unrestrained thickness, the uncut section of said mat serving to anchor the unconfined area to the area clamped between the fastening members.

2. The method of supporting a resilient, compressible mat which comprises clamping and compressing the mat at spaced intervals between fixed fastening members positioned against opposite faces of the mat, and incising the mat to a fraction of its thickness along the margin of one of the fastening members adjacent one of said intervals thereby to permit the portion of the mat adjacent said one member to decompress, the uncut fraction of said mat serving to anchor the unconfined area of the mat to the area clamped between the fastening members.

3. The method of supporting a resiliently compressible bonded, fibrous mat which comprises clamping and compressing the mat at spaced intervals between fixed fastening members positioned against opposite faces of the mat, and severing a substantial portion of the fibers in the mat without completely severing the mat where they cross the plane of an edge of one clamping member adjacent one of said intervals which is transverse to the clamping face of that member, the uncut portion of said fibers serving to anchor the unconfined area of the mat to the area clamped between the fastening members.

4. A method of applying a resilient compressible mat to a supporting surface comprising the steps of positioning one face of the mat against the surface, placing clamping members of limited frontal area at spaced intervals against the opposite face of the mat, advancing the clamping members toward said surface and securing them to the surface to hold and compress the mat, and incising the compressed mat partially therethrough adjacent the edges of the clamping

members to a depth which will allow the mat to decompress substantially to its normal unrestrained thickness, the uncut section of said mat serving to anchor the unconfined area of the mat to the area clamped between the fastening members.

5. A method of applying a resilient compressible mat to a supporting surface comprising the steps of positioning one face of the mat against the surface, placing battens at spaced intervals against the opposite face of the mat, advancing the battens toward said surface to hold the mat and compress the portions under said battens against the surface, inserting a blade into the mat while holding the blade flush with the longitudinal edge of a batten, and drawing the blade along said edge of the batten to slit said mat partially therethrough to a depth which will allow decompression of the mat adjacent the batten edge substantially to its normal unrestrained thickness, the uncut section of said mat serving to anchor the unconfined area of the mat to the area clamped between the fastening members.

6. In a method of applying a resilient, compressible thermal insulating mat to a supporting surface wherein the mat is compressed beneath spaced battens which secure it to the supporting surface, the step of drawing a sharpened blade along the edges of each batten to slit the compressed mat partially therethrough adjacent the battens to a depth allowing decompression of the mat to its normal thickness adjacent the batten edges, the uncut section of said mat serving to anchor the unconfined area of the mat to the area clamped between the fastening members.

7. In a method of applying a resilient, compressible acoustical insulating mat to a supporting surface wherein the mat is compressed beneath spaced battens which secure it to the supporting surface, the step of drawing a sharpened blade along the edges of each batten to slit the compressed mat partially therethrough to a depth allowing decompression of the mat to its normal thickness adjacent the batten edges, the uncut section of said mat serving to anchor the unconfined area of the mat to the area clamped between the fastening members.

8. A method of applying successive layers of resilient compressible mat to a supporting surface, including the steps of positioning a first layer of mat against the surface, placing battens against the exposed face of the mat, advancing the battens toward said surface and securing them to the surface to hold and compress the mat, slitting the compressed mat partially therethrough adjacent the batten edges and along their length to a depth allowing decompression of the mat substantially to its normal unrestrained thickness adjacent the batten edges, placing another layer of mat over the first mentioned layer, positioning additional battens against the exposed face of the second mat layer and over said first battens, advancing said additional battens toward said first battens and securing them thereto to hold and compress said second mat layer, and slitting the second mat layer partially therethrough adjacent the edges of said second battens along their length to a depth allowing decompression of the second mat substantially to its normal unrestrained thickness along the batten edges.

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