METHOD OF ATTACHING MATS

Filed Jan. 21, 1950

Fig. 1.

Fig. 2.

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METHOD OF ATTACHING MATS

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Application January 21, 1950; Serial No. 139,980

8 Claims.

(Cl. 20—4)

1. 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 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 mat 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 insulating 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 applying 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 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-surface 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—embodifying 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 un-
restrained and of full thickness, but this loss
and 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.  

The salient novelty of my invention resides in
recovery of the loss of insulating effect repre-
sented by the open notch 8 along the margins
of the securing member. This I accomplish sim-
ply 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
dge 5a so that the severed portions lying out
from under the batten are permitted to spring
back up to their unrestrained position. The slit
must not extend all the way through the mat but
must be deep enough to permit de-

compression of the mat beside the batten sub-
stantially to full, unrestrained thickness. In this
fashion the notches 8 are eliminated and full in-
sulating value of the mat is obtained close to
the battens as well as farther away. The fin-
ished assembly also has a much neater appear-
ance 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
eve of the upper edge of the batten shows the
appearance of the upper edge of the mat. The
upper edge illustrates the conformance of the mat prior to slit-
ting.

Fig. 2 illustrates the application of the fore-
goin method to the insulation of a railroad car
wherein two thicknesses or layers of mat are em-
ployed. 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 be-
ing secured to the car-wall side members 14. A
cutting instrument is then used to cut a slitting
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 decom-
press 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 posi-
tioned 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 ad-


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pressible mat in their application to any sur-
faces 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 in-
herent to the invention.

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

Having thus described my invention, I claim:
1. The method of supporting a resilient, com-
pressible mat which comprises clamping and
compressing the mat at spaced intervals between
fixed fastening members positioned against op-
posite faces of the mat, and slitting the com-
pressed mat partially therethrough along the
margin of one of the fastening members adja-
cent one of said intervals to permit the mat adja-
cent said one member to decompress to sub-
stantially 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.

2. The method of supporting a resilient, com-
pressible mat which comprises clamping and
compressing the mat at spaced intervals between
fixed fastening members positioned against op-
posite 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 incision to decompress
the uncut portion 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 com-
pressible bonded, fibrous mat which comprises
clamping and compressing the mat at spaced in-
tervals between fixed fastening members posi-
tioned 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 a fraction 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 compres-
sible mat to a 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 oppo-
site face of the mat, advancing the clamping
members toward said surface and securing them
to the surface thereby to clamping the mat, and
incising the compressed mat partially there-
through 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 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 battens against said battens and securing them thereto to hold and compress 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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