March 8, 1932. E. R. POWELL 1,848,272

INSULATED WALL STRUCTURE

Filed July 20, 1928

FIG. 1

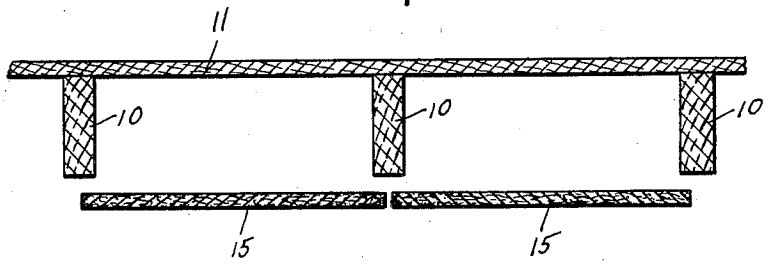


FIG. 2

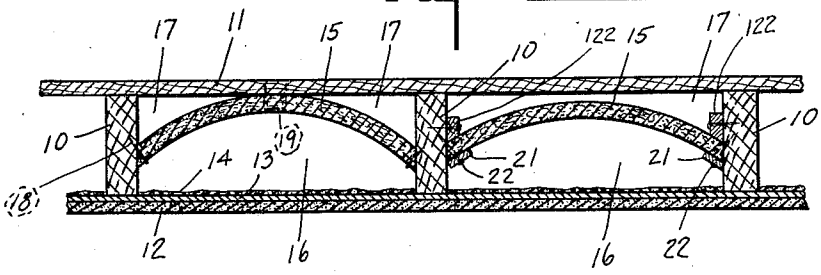


FIG. 3

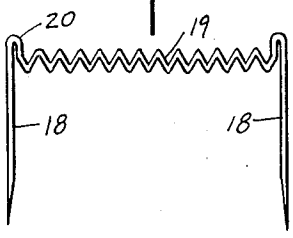


FIG. 4

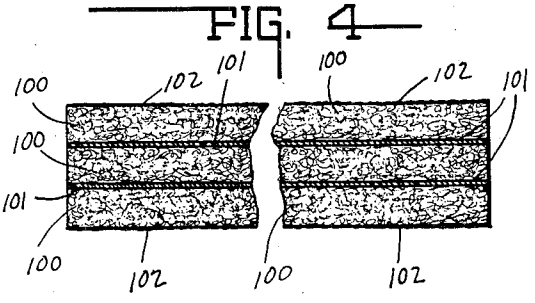
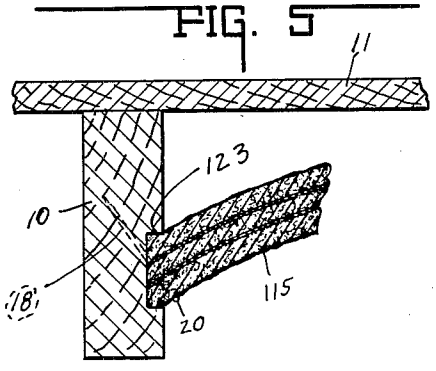


FIG. 5



INVENTOR.

EDWARD R. POWELL.

BY Lockwood, Lockwood, Goldsmith & Galt

ATTORNEYS.

Patented Mar. 8, 1932

1,848,272

UNITED STATES PATENT OFFICE

EDWARD R. POWELL, OF ALEXANDRIA, INDIANA, ASSIGNOR TO BANNER ROCK CORPORATION, OF ALEXANDRIA, INDIANA, A CORPORATION OF DELAWARE

INSULATED WALL STRUCTURE

Application filed July 20, 1928. Serial No. 294,188.

This invention relates to an insulating wall and a method of forming the same.

Among the several objects of the invention is the formation of an insulating construction with insulating air spaces by the use of a substantially fire proof and thermal insulating partition, applied to a wall structure in a unique manner.

One of the features of the invention comprises anchoring in curved relation between walls and studding a sheet of substantially fire proof and thermal insulating material having a greater, normal overall width than the width to be spanned thereby.

Another feature of the invention consists in the sheet of material having sufficient resiliency for accomplishing the aforesaid object, that is, bending without breaking or cracking and having sufficient rigidity to maintain its bent condition without failure after anchorage in that position. To satisfy these conditions the material is of a stratified type, such that in the bending operation the layers slide relative to each other to accommodate the curvature.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

In the drawings Fig. 1 is a transverse sectional view taken through a wall in the process of building, including studding, one wall and the insulating material of the invention. Fig. 2 is a similar view of the completed wall with the insulating material of the invention applied thereto. Fig. 3 is an enlarged elevation of one and preferred form of staple. Fig. 4 is an enlarged transverse sectional view of one form of stratified sheet. Fig. 5 is an enlarged transverse sectional view of a modified form of joint or mounting.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

In the drawings numeral 10 indicates parallel studding connected by one wall 11 and another wall comprising lathing 13 and plaster 12 locked as at 14, thereby forming a chamber between the studding and the outer wall. This is the usual wall or floor construction, and the present invention can be applied to walls, ceilings or floors, although the term wall herein is intended to cover all these uses.

The material used in association with the foregoing consists of a sheet 15 of semi-rigid felt made by making mineral wool or fiber in a blow chamber, rolling out the same into sheet formation, and there-after treating the rolled sheet, if necessary, to obtain the desired stiffness and the desired flexibility.

The sheet 15, as shown clearly in Fig. 1, is of greater normal over-all width than the space between the members of the studding. To position the sheets between the studding members requires bending the sheets which are herein shown in arched formation although, if desired, other forms of bending may be used.

Herein the arch is shown outwardly directed from the inner wall 12, 13, 14, thereby forming an inner wall air space 16 entirely separated from the outer wall 11 and said outer wall is separated from the insulation sheet 15 by the outer air chambers 17. If desired the arch may be reversed.

Any suitable means may be employed for anchoring the sheet in arched formation and maintaining said sheet in that formation. In many instances the sheet will be of sufficient width so that it will extend from studding to studding at adjacent corners and engage the opposite wall at the mid-portion, and be wedgingly associated therewith without any further means for anchorage. Also the studding may be grooved as shown in Fig. 5 or blocks or strips may be tacked to the studding, see 22 and 122 in Fig. 2, or 123 in Fig. 5, and serve as abutments against which the arched felt sheet when sprung engages.

In Fig. 4 there is illustrated in detail one form of stratified sheet, the same herein being shown as including a plurality of layers 100, of mineral wool of suitable character, separated by layers of relatively impervious material such as an asphalt coating. The coating is continuous in character and the layers thereof are indicated by the numeral 101. The sheet may also be covered by coatings 102, similar or identical in character with layers 101. The mineral fiber layers 100 may or may not include asphalt, but if

they do so there is no continuous sheet of asphalt included in the layer. The layers 101 and 102 are relatively impervious, not only to the passage of water, but also to the passage of air therethrough, and, therefore, serve as a wind break. This laminated construction will bend farther without fracturing or cracking than a unit structure of the same mechanical strength, inasmuch as the layers slide upon each other.

Another form of sheet anchorage is effected by stapling the abutting portions of the sheet and the wall structure; and herein the stapling is shown associated with the ends of the sheet and also the mid-portion, so as to secure the former to the studding and the latter to the wall.

In Fig. 3 is shown a U-shaped staple having a penetrating prong 18, a toothed connecting portion 19 and a head portion 20 as illustrated. This staple can be applied to the sheet or other stapling means may be utilized. The left-hand portion of Fig. 2 shows the staples applied to the longitudinal edge portions and the mid-portion of the sheet.

The right hand portion of Fig. 2 shows the sheet in spaced relation from the outside wall 11, and the edges are anchored to the studding by lathing or anchoring strips 21 and 122 suitably anchored by nails such as 22. The nails may pass through the edge of the strip if desired, or if desired the strips 21 and 122 may be first nailed to the studding overlapping the edges of the strip and thus forming pockets for the edges of said strip.

The result is a plurality of air chambers formed between two adjacent walls by a sheet of insulating material of greater width than the width between the studding members, said material being sprung into position and retained in the said sprung condition and air chamber forming relation.

In addition to its inherent insulating value, this invention has the added advantage of ease of application.

The invention claimed is:

1. An insulated wall construction comprising a pair of walls in spaced relation, studding interposed therebetween and forming a chamber therewith, and a sheet of bendable insulation material secured in said chamber in bent relation and dividing said chamber in a plurality of air spaces, said sheet comprising a plurality of dissimilar layers, one being relatively impervious to moisture and air passage therethrough.

2. A wall construction comprising a plurality of walls in spaced relation, studding members interposed therebetween to form at least one chamber, a sheath of material having a normal width greater than the distance between said studding members, said sheath being sprung between said member in arched shape, said sheath comprising layers of mineral wool.

3. A wall construction comprising a plurality of walls in spaced relation, studding members interposed therebetween to form at least one chamber, a sheath of material having a normal width greater than the distance between said studding members, said sheath being sprung between said member in arched shape, said sheath comprising layers of mineral wool alternating with sheets of material impervious to moisture.

4. An insulated wall construction comprising a pair of walls in spaced relationship, studding interposed therebetween and forming a chamber therewith, and a sheet of bendable insulating material secured in said chamber in bent relation and dividing said chamber into a plurality of air spaces, said sheath comprising a plurality of dissimilar layers, at least one of which consists of mineral wool and at least another of which consists of sheeting containing at least some asphaltic material.

5. An insulating material adapted to be wedgingly associated between the studding members in walls, said insulating material comprising a sheath of semi-rigid felt of fibrous mineral material coated on the sides with an impervious material which renders the sheet semi-rigid and adapts the same to be bent without cracking.

6. An insulating material adapted to be wedgingly associated between studding members in a wall, said insulating material comprising a resilient bendable sheath consisting of layers of mineral wool coated on the sides with an asphaltic material to render the same impervious to air and moisture.

7. An insulating material adapted to be arched between studding in walls to form air spaces, said insulating material comprising a sheet of semirigid felt of mineral fibres coated on the sides with asphalt, whereby the sheet is rendered impervious to air and moisture and adapted to maintain its form.

In witness whereof, I have hereunto affixed my signature.

EDWARD R. POWELL.