Jan. 17, 1933. C. B. KILMER 1,894,592

INSULATING UNIT

Filed July 18, 1931

Fig. 1

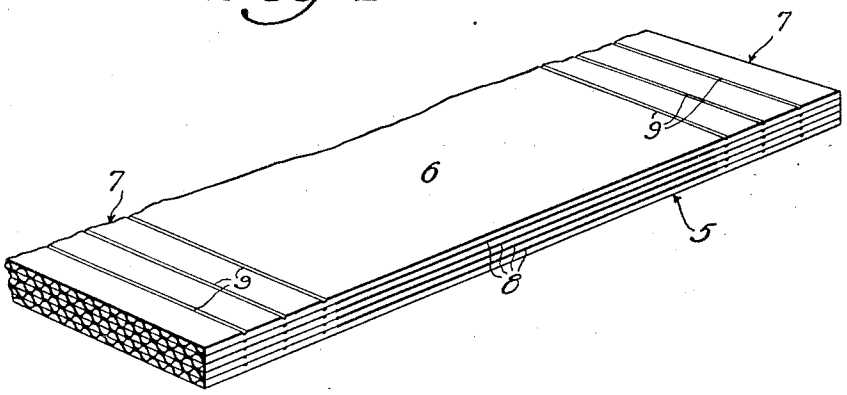


Fig. 2

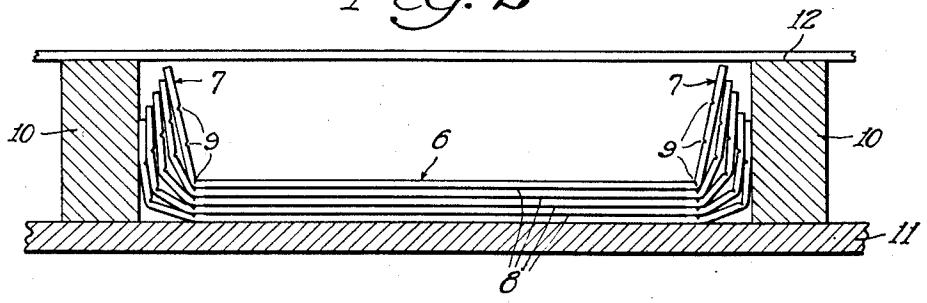
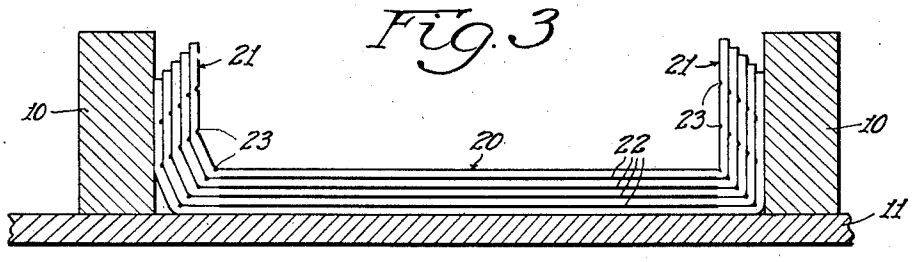


Fig. 3



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UNITED STATES PATENT OFFICE

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INSULATING UNIT

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The present invention relates to building material and more particularly to insulating units for use in building construction.

One object of the invention is to provide an improved insulating unit of simple and inexpensive form, easy to manufacture and which may be shipped, handled and installed with a minimum of cost and effort.

A further object is to provide an insulating unit of built-up air cell board providing unsecured edge portions to facilitate bending of the edges and to effect the frictional retention of the units between spaced frame members.

An additional object is to provide a unit which will adapt itself to any irregularities of spacing or deviations of the parallelism of the frame members of a building wall.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawing:

Fig. 1 is a fragmentary perspective view of one end of the insulating unit embodying the present invention;

Fig. 2 is an edge view showing the unit inserted in place between spaced frame members; and

Fig. 3 is a view of a modified form of insulating unit also shown in place between the spaced frame members.

Similar reference numerals throughout the several views indicate the same parts.

The present invention provides a convenient insulating unit which is inexpensive, light in weight, and readily handled and, when made of air cell board such as ordinary corrugated paper board, gives a relatively high insulating value to building construction when employed therein. The present invention is particularly advantageous for use in the construction of dwelling houses of frame or brick and also finds use in many other types of building construction where an inexpensive type of insulation is desired. The invention, as disclosed, is embodied in a single unit formed of cellular layers of board secured together to provide a body portion and one or more bendable edge portions adapted to make the unit readily insertable between the frame members of walls, ceilings, or floors of ordinary building constructions.

Referring more particularly to the drawing, there is shown at 5 in Fig. 1 a complete unit made up of a number of sheets of corrugated board, preferably of uniform size, secured together to form a main body portion 6 and deflectable side portions indicated in their entirety at 7, 7. The portions of the individual sheets constituting the main body portion 6 are secured together by any suitable adhesive, indicated at 8, 8 and the deflectable edge portions 7 constitute the free edge portions of the individual sheets between the secured area and the lateral edges of the unit. These latter free edge portions of the sheets are preferably entirely unsecured so as to permit a free sliding movement, one upon the other, when such edge portions are subjected to a deflecting stress.

While the unit may be formed of any suitable type of resilient material having good insulating value, in the present instance I prefer to use ordinary single faced corrugated board. The number of sheets of material employed is optional, depending upon the degree of insulating desired.

As heretofore stated, an important object of the invention is to provide an insulating unit which will be readily adaptable to any ordinary irregularities which may be found in the spacing of the frame members in building construction and especially to provide a unit that is readily adapted to be frictionally maintained between frame members which are spaced apart farther than the standard adopted for any given building construction. In order to accomplish this the width over all of the present insulating unit is preferably made substantially greater than the distance between the inner faces of the frame members of the building but is narrow enough so that the ends when bent over will readily lie within the contour of ordinary 2″ by 4″ frame members. With a proper selection of a width for any standard spacing, it is apparent

that variations of as high as 3″ may be readily taken care of without any trimming or alteration of the units. In order to provide ease in the bending of the edge portions 7, 7, the individual sheets making up the unit are preferably scored as indicated at 9, 9 thus making it a simple matter to bend the sheets by hand along well defined lines substantially parallel to the edges of the units.

These score lines provide in the edge portions of the several sheets a plurality of sections swingable relative to each other. In practice this construction makes it possible to bend the edge portions of the units along lines more or less removed from the center line of the unit. Thus, if the spacing is substantially normal or standard, the edge portions of the unit will be bent along one of the score lines near the center of the group of score lines with which the edge portions are provided; if the spacing is narrow, the bending may be at the innermost score line; and if the spacing is wider than normal, then the bending will take place along the score lines nearer the edges of the unit. No extensive bending will take place except along score lines on which a definite bending stress is exerted, thus the board along any score line not affected by any bending stresses will remain substantially unbent. Accordingly it is apparent that, within any ordinary limits of deviation, the units may be inserted in place between the frame members with the edge portions bent and fairly snugly fitted within the corners formed between the studs or other frame members 10 and the sheathing or roof boards or the like, indicated at 11. At the same time the extreme outward extent of the edges of the individual layers or sheets will not be farther than the inner contour of the studs 10 upon which lath or other plaster receiving means 12 is to be nailed. In extreme cases, where the frame member spacing is considerably above standard, it is found practicable to insert the unit by bending only one of the edge portions and leaving the opposite edge portions unbent, with its edges bearing directly against the adjacent frame member.

In the modified form of the invention shown in Fig. 3 the unit 20 is provided with bendable portions 21, 21 and the central portion of the individual sheets of this unit are secured by adhesive 22, 22 similar to the embodiment previously described. In this form of the invention, however, score lines 23, 23 are provided in the edge portions 21 which are offset relative to each other so that the edge portions may be bent along any given score line to form a neat right angular bend instead of the more rounded bend shown in Fig. 2. For this purpose the score lines in the assembled sheets, when viewed along the edge of the unit, define a line substantially at a 45° angle to the face of the unit.

While the invention has been described as embodying two bendable edge portions, one on each side of the unit, it is apparent that satisfactory results may be obtained by providing score lines in one side only so that the edge of the unit is flush against the frame member at one side and would be bent to resiliently engage the face of the opposite frame member.

In the operation of assembling the units of the present invention in the building wall, the workman will merely place the unit so that its edges are symmetrically placed with relation to the spaced frame members whereupon he will push the unit, at points along the edges just inside the frame members to cause the edges of the unit to bend and enter the space between the frame members.

Due to the fact that the unsecured edge portions of the sheet readily slide one upon the other when the bending takes place, there will be no tearing or mutilation of the sides of the unit and they will neatly enter the space with the edges of the unit lying within the contour of the frame members. The resilience of the individual layers will cause a very substantial outward thrust against the faces of the frame members, thus securely holding the unit in place.

From the foregoing it is apparent that the present invention provides an insulating unit that requires no securing means in assembling it in wall, ceiling or roof constructions. The unit is very light in weight, inexpensive to manufacture, can be packed in a minimum of space, and can be installed by comparatively unskilled labor. Further, the unit is adapted for entire completion at the factory and is ready for insertion by the workman without any further treatment whatsoever.

While the present description sets forth a preferred embodiment of the invention, numerous changes may be made in the construction without departing from the spirit of the invention, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:

1. An insulating unit adapted to be inserted between spaced frame members, said unit comprising a plurality of rectangular sheets of corrugated board secured together throughout an area intermediate two opposite sides leaving free individual edge portions along said sides capable of sliding one upon the other when subjected to a deflecting stress, whereby the edge portion of the unit may be readily bent toward right angular relationship to the plane of the unit.

2. The combination with the spaced frame members of a building, of a unit of built-up, resilient air cell board comprising a plurality

of layers secured together along an area spaced inwardly from two lateral edges of the unit, the dimensions of said unit at right angles to the longitudinal extent of its secured area being somewhat greater than the distance between adjacent frame members, the edge portions of the individual layers on each side of the secured area being unsecured so as to readily slide one upon the other when the edge portions are bent in a direction at right angles to the plane of the unit, whereby the unit may be inserted between and frictionally held in place against adjacent faces of said frame members.

3. An insulating unit adapted for frictional placement between spaced frame members of a building, said unit comprising a plurality of built-up rectangular sheets of deflectable air cell board of uniform size, one dimension of said unit being substantially greater than the spacing of said frame members, the individual sheets being secured together over a substantial area running in a direction substantially parallel to the frame members between which the unit is to be placed, and the edge portions of said sheet parallel with said secured area being unsecured to each other whereby when the unit is forced into position between spaced frame members said free edge portions will be deflected and will snugly engage the adjacent faces of the frame members.

4. An insulating unit adapted to be inserted between spaced frame members, said unit comprising a plurality of superposed, rectangular sheets of resilient air cell board secured together along a substantial area spaced inwardly from the lateral edges of the unit, the dimension of said unit at right angles to the edges of said secured area being somewhat greater than the spacing of the frame members, at least a part of the total number of edge portions of the sheets along said secured area being unsecured, thus providing edge portions for the unit comprising a plurality of individual deflectable layers capable of slippage one upon the other under deflecting stresses, whereby forcible insertion of the unit between adjacent frame members will bend the edge portions of the unit and cause it to frictionally engage the face of a frame member and hold the unit in place.

5. An insulating unit adapted to be inserted between spaced frame members, said unit comprising a plurality of superposed, rectangular sheets of resilient air cell board secured together along a substantial area spaced inwardly from the lateral edges of the unit, the dimension of said unit at right angles to the edges of said secured area being somewhat greater than the spacing of the frame members, at least a part of the total number of edge portions of the sheets along said secured area being unsecured, thus providing edge portions for the unit comprising a plurality of individual deflectable layers capable of slippage one upon the other under deflecting stresses, whereby, upon deflecting said edge portions and inserting the unit between adjacent frame members the unit will be frictionally maintained in place.

6. An insulating unit comprising a plurality of sheets of corrugated board partially secured together, said secured portion terminating short of the outer edges of said unit, forming extending portions, said extending portions being scored at intervals to provide a plurality of foldable sections, whereby, when said unit is inserted between the spaced frame members of a building wall, said sections will snugly contact such frame members and serve as resilient means to frictionally maintain said unit in place, the score lines in said sections being uniformly spaced but offset uniformly between adjacent sheets, whereby the unit may be bent along any selected group of score lines to form a bent over portion extending at substantially right angles directly from the unit.

7. An insulating unit comprising a plurality of sheets of corrugated board partially secured together, having their corrugations extending at right angles to said secured portion said secured portion terminating short of the outer edges of said unit, forming extending portions, said extending portions being scored at intervals to provide a plurality of foldable sections, whereby, when said unit is inserted between the spaced frame members of a building wall, said sections will snugly contact such frame members and serve as resilient means to frictionally maintain said unit in place, the score lines in said sections being uniformly spaced but offset uniformly between adjacent sheets, whereby the unit may be bent along any selected group of score lines to form a bent over portion extending at substantially right angles directly from the unit.

Signed at Chicago, Illinois, this 10th day of July, 1931.

CHARLES B. KILMER.