

Nov. 21, 1944.

J. COWIN

2,363,296

SECURING MEANS FOR INSULATING PANELS

Filed March 17, 1942

2 Sheets-Sheet 1

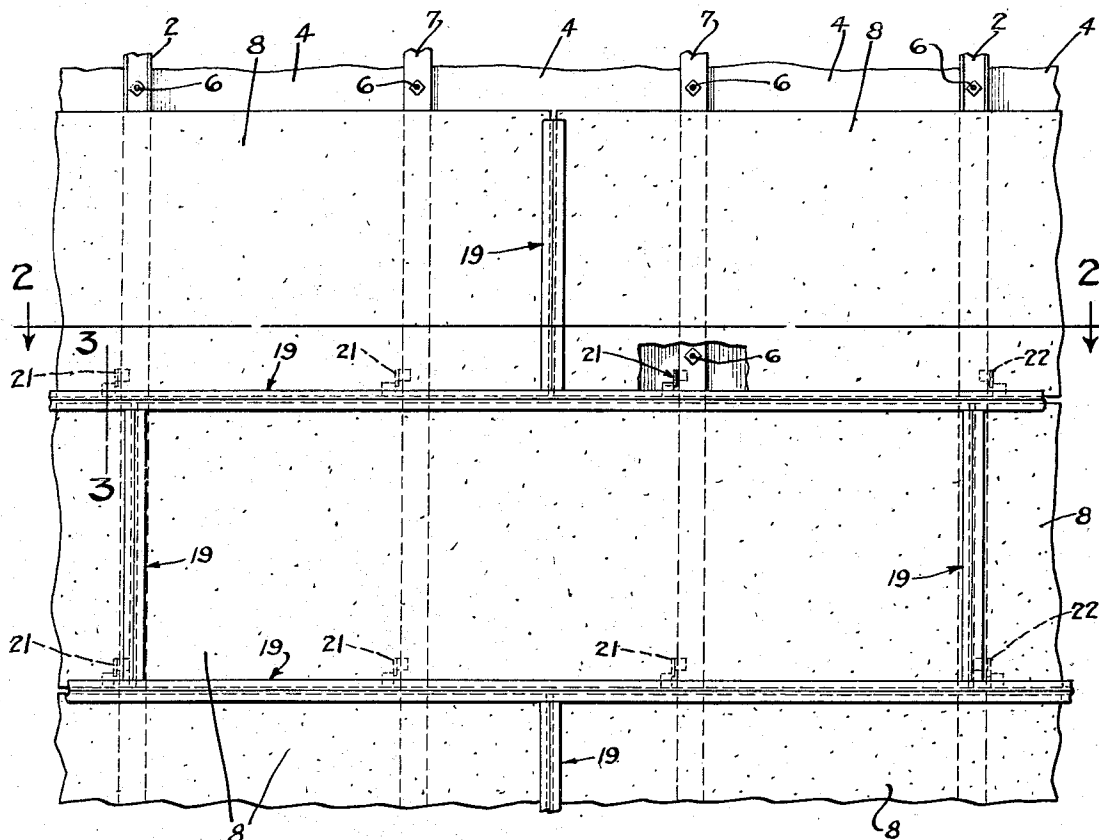


FIG. 1

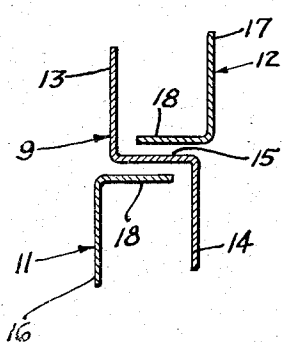


FIG. 8

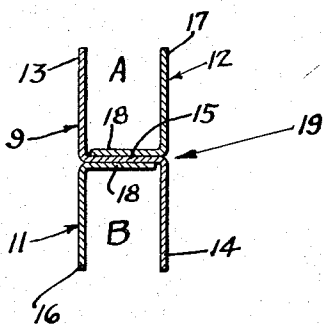


FIG. 9

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2 Sheets-Sheet 2

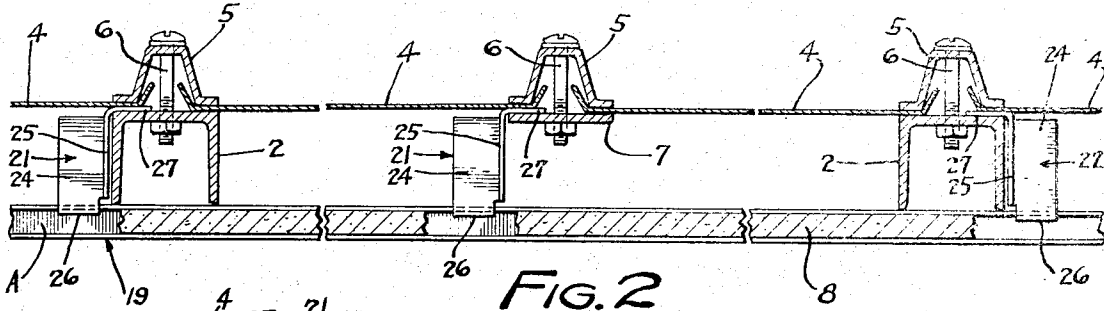


FIG. 2

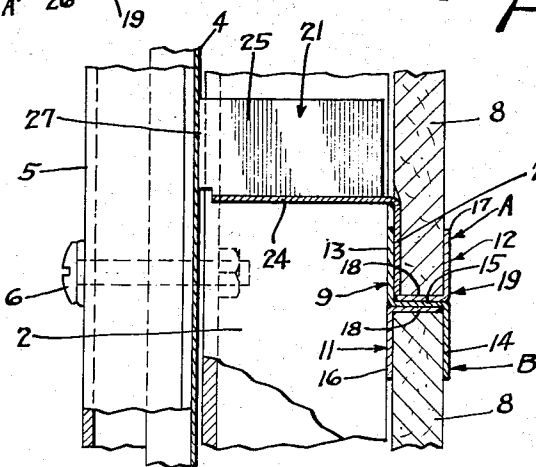


FIG. 3

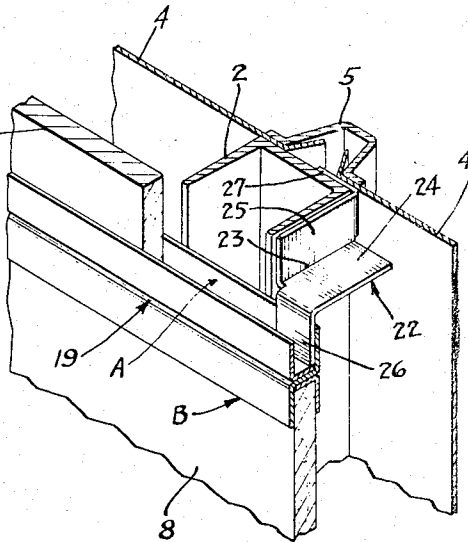


FIG. 4

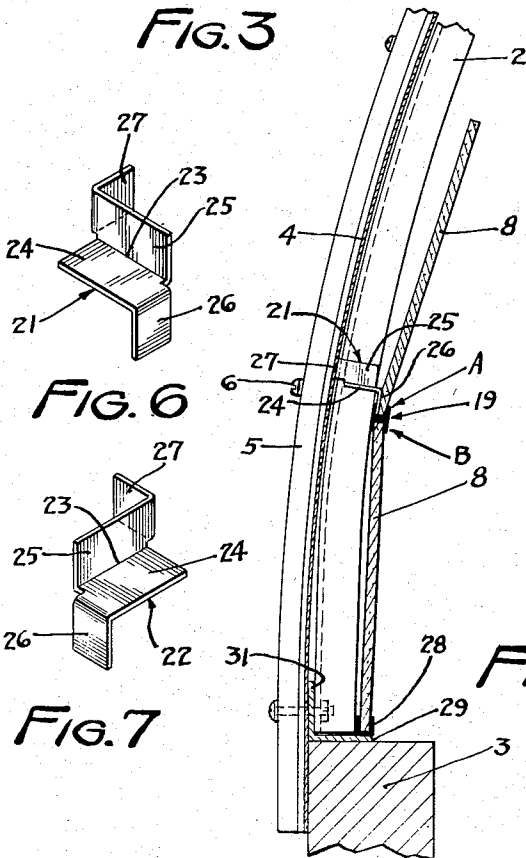


FIG. 5

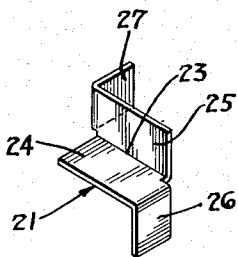


FIG. 6

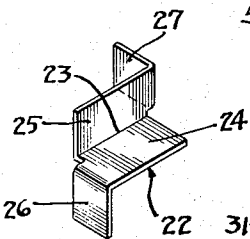


FIG. 7

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## UNITED STATES PATENT OFFICE

2,363,296

SECURING MEANS FOR INSULATING  
PANELS

James Cowin, Minneapolis, Minn.; Marion P. Cowin and Northwestern National Bank of Minneapolis, administrators of said James Cowin, deceased, assignors to Cowin and Company, Minneapolis, Minn., a corporation of Minnesota

Application March 17, 1942, Serial No. 434,993

3 Claims. (Cl. 189—34)

This invention relates to a new and improved securing means for mounting insulating or wall panels upon a wall or ceiling, and more particularly to the novel construction of said securing means.

An object of the present invention is to provide a novel securing means adapted for use in mounting wall panels in position against the inner surfaces of the studding or uprights of a wall or ceiling, and whereby such panels may be expeditiously secured thereto without the use of bolts, screws, nails, or other similar fastening means.

A further object is to provide a novel channel structure comprising oppositely facing channels each adapted to receive an edge of an insulating panel, and said channel structure being so constructed as to provide a leak proof joint between the contiguous edges of the adjacent panels.

A further and more specific object of the invention is to provide a channel structure formed of sheet metal and including a main part of substantially Z-bar cross-section, comprising oppositely disposed flanges connected together by a central connecting portion whereby said flanges are disposed in spaced parallel planes, and suitable angle irons being secured to opposite sides of said central portion and each having a leg disposed in parallel relation to one of the flanges of the Z-bar and cooperating therewith to provide a channel, and whereby said angle irons and Z-bar provide a double channel structure in which the channels are arranged in back-to-back relation and are connected together by a leak proof joint.

A further object is to provide a novel clip for securing wall panels to the inner surfaces of a plurality of uprights or studding, each clip being formed from a single piece of sheet material, having its body bent longitudinally whereby said body is angular in cross-section, and each web of said angle being formed with a tongue adapted to engage respectively a wall panel and one of said uprights or studding, thereby to secure the panel to the studding.

Other objects of the invention will reside in the simple and inexpensive construction of the double channel for receiving contiguous edges of adjacent panels, thereby to protect and reinforce them, and also whereby the operation of securing the panels in position in the wall may be greatly facilitated; in the three piece construction of the double channel, whereby when said channel is completed, it will comprise oppositely disposed channels secured together, back to back, in leak proof relation; and in the novel construction of the securing clip which may be made in

quantity production at small cost, and greatly facilitates the operation of securing the wall panels in position against the studding without the use of screws or bolts.

Other objects of the invention will appear from the following description and accompanying drawings and will be pointed out in the annexed claims.

In the accompanying drawings there has been disclosed a structure designed to carry out the various objects of the invention but it is to be understood that the invention is not confined to the exact features shown as various changes may be made within the scope of the claims which follow.

In the drawings:

Figure 1 is an elevational view showing a portion of the inside surface of a building wall with insulating panels secured thereto by the novel channels and clips herein disclosed;

Figure 2 is a sectional plan view on the line 2—2 of Figure 1, on a larger scale, showing how the clips are engaged with the wall uprights and the channels;

Figure 3 is a detail sectional view on the line 3—3 of Figure 1 on an enlarged scale;

Figure 4 is a perspective view showing the manner of positioning the clip to secure the wall panel in position against the inner surfaces of the uprights or studding;

Figure 5 is a detail sectional view of a portion of a wall, showing the manner of mounting the insulating panels against the wall uprights and securing them thereto;

Figure 6 is a perspective view showing one of the securing clips;

Figure 7 is a view showing a similar clip but oppositely formed from the one shown in Figure 6;

Figure 8 is a detail sectional view on an enlarged scale showing the various parts which cooperate to form the double channel; and

Figure 9 is a cross sectional view of the completed channel.

In the selected embodiment of the invention herein disclosed, there is illustrated in Figures 1, 2 and 5 for purposes of disclosure, a portion of a building wall similar to the one shown and described in my co-pending application, Serial No. 424,277, filed December 24, 1941. The wall, as best shown in Figure 2, comprises a plurality of uprights or studding 2, which, as shown in Figure 5, are arch-shaped whereby they may also constitute the rafters for supporting the roof of the building. It is to be understood, however, that

the invention is equally applicable to buildings in which the studding 2 extend vertically the height of the walls, and support suitable rafters, not shown, which provide the supporting means for the usual roof covering, as is well known. The invention, however, is particularly applicable to buildings of the general type shown and disclosed in my above mentioned pending application.

The uprights 2 are shown of channel cross-section and are suitably supported upon a foundation 3. Suitable wall plates 4 are secured to the outer surfaces thereof by suitable clamping channels 5 seated against the contiguous edges of adjacent wall plates and secured in position by bolts 6, received in apertures provided in the uprights 2. The joints between adjacent wall plates which fall between the studding 2, are supported by similar clamping channels 5, having strap like plates 7 arranged in clamping relation thereto by bolts 6. The contiguous edges of adjacent wall plates are clamped between the channels 5 and straps 7 as shown in Figure 2. All of the above described construction is shown and described in detail in my heretofore mentioned pending application, and therefore need not be further described herein.

In all-metal buildings of the type herein referred to, it has been found highly desirable to insulate the wall and ceiling or roof to prevent the conduction of heat or cold therethrough. To thus insulate the walls, I propose to secure a plurality of insulating boards or panels 8 against the inner surfaces of the uprights or studding 2, which panels, when the building is completed, may constitute the inner wall surfaces of the walls and ceiling of the building.

It is important that the insulating panels 8 be secured in position against the uprights 2 whereby the joints therebetween will be substantially leak proof, thereby to prevent the infiltration of cold or warm air through said joints. To thus secure the contiguous edges of adjacent panels together in leak proof relation, I utilize a double channel structure, generally designated by the numeral 19. This double channel is composed of three parts, all formed of sheet metal, and consists of a main body portion of substantially Z-bar cross-section, designated by the numeral 9, and two angle irons, generally designated by the numerals 11 and 12. The oppositely extending flanges 13 and 14 of the Z-bar 9 are connected together by a central connecting portion 15, clearly illustrated in Figure 8, whereby the flanges 13 and 14 are disposed in spaced parallel planes, as clearly shown in Figures 8 and 9.

The angle irons 11 and 12 are adapted to be secured to the central connecting portion 15 of the Z-bar 9. To thus secure the angle irons 11 and 12 to the Z-bar, the legs 18 thereof are seated against opposite sides of the central connecting portion 15 and secured thereto by suitable means such as welding. When the angles are so secured to the Z-bar, the oppositely extending webs 16 and 17 of the angles 11 and 12, respectively, cooperate with the flanges 13 and 14 of the Z-bar to provide a double channel structure in which the channels A and B are oppositely disposed and connected together by a leak-proof joint.

The channels 19, as will be noted by reference to Figures 1, 3, 4 and 5, are adapted to connect together the contiguous edges of adjacent panels 8, both vertically and horizontally. The horizontal channels preferably extend the full length of the panels and may have their ends abuttingly engaged at spaced intervals along the length of the

wall structure. The vertically disposed channels are shown cut slightly shorter in length than the overall width of their respective panels, whereby the ends thereof will seat against edges of the horizontal channels 19, as clearly illustrated in Figure 1.

Another important feature of the invention resides in the novel means provided for supporting the panels 8 in position against the uprights or studding 2. To thus secure the panels in position, a plurality of clips, generally designated by the numerals 21 and 22, are provided, which are preferably made right and left hand, as clearly illustrated in Figures 6 and 7. Each clip is formed from sheet material, preferably metal, and has an elongated body portion which is bent along a line 23 whereby the body of each clip is substantially right angular in cross section, and is composed of webs 24 and 25. The web 24 of each clip 21 or 22, is formed at one end with a downwardly extended tongue 26, and its complementary web 25 is formed at the opposite end of the clip with a laterally extending tongue 27. Like parts of the clips 21 and 22 are indicated by like numerals.

When insulating or wall panels are to be embodied in a wall, a single channel 28 is preferably fitted over the lower edge of the bottom panel, as shown in Figure 5. The channel 28 may be seated upon the horizontal leg 29 of an angle 31 secured to the foundation 3, and serving as a means for anchoring the lower ends of the uprights 2.

A double channel 19 has its downwardly facing channel B fitted over the upper edge of the lower panel 8, and the next succeeding panel 8 is then seated in the upwardly facing channel A, as shown in Figure 5. The lower panel 8 is then secured in position by inserting the tongue 26 of a clip 21 into the upper channel A of the double channel 19, and the laterally extending tongue 27 at the opposite end of the clip is inserted between the outer surface of an upright 2 and the wall plate 4, it being necessary in some instances, to loosen the bolt 6 sufficiently to permit insertion of the tongue 27 between the parts, as shown at the left hand side of Figure 2. When the clip is thus engaged with the channel 19 and the upright 2, the panel 8 is securely retained in position against the inner surface or edges of the upright 2.

Similar clips are utilized for supporting the intermediate portion of the panels 8, as shown in Figure 2. These clips have their tongues 26 engaged with the channels 19, in a manner similar to the ones at the left hand end of Figure 2, and the laterally extending clip 27 thereof is fitted between the wall plate 4 and the strap like clamping member 7, as shown. At the right hand end of Figure 2 the panel is shown secured to the upright 2 by a clip 22, of the type shown in Figure 7. The clips 21 and 22 may be inserted at any point where desired, as the tongues 26 thereof may be inserted in one of the horizontal channels and the tongue 27 be received between the wall plate and studding 2, or between the wall plate and the clamping member 7.

By the use of the clips 21 and 22, and double channels 19, the insulating panels 8 may readily and quickly be mounted in the wall with a minimum of effort and without the use of bolts or screws. By concealing the horizontal and vertical edges of the insulating panels or boards by inserting them in the double channels herein disclosed, the panels will be uniformly and rigidly supported over the entire area of the wall, and it will also be impossible for cold or warm air to

pass between the opposed channels A and B of the double channels 19.

I have found from actual experience, that the simple clips herein disclosed, used in combination with the double channels 19, greatly facilitate the installation of the insulating panels or boards 8 in the building walls and ceiling.

The clips 21 and 22 are extremely simple and inexpensive in construction, and may be made in large quantities by stamping and forming dies, as is well known.

By insulating the walls and ceiling of a building with insulating panels, as herein set forth, the building may be rendered very comfortable, in that the conduction of heat or cold through the walls and ceiling is greatly minimized. The parts of the double channels 19 may readily be formed by well known methods, and when subsequently assembled and secured together, as shown in Figure 9, the channels A and B become unitary structures which will positively prevent the passage of air, whether warm or cold, between the contiguous edges of the adjacent panels.

It will be apparent to those skilled in the art that I have accomplished at least the principal objects of my invention, and it will also be apparent to those skilled in the art that the embodiments herein described may be variously changed and modified, without departing from the spirit of the invention, and that the invention is capable of uses and has advantages not herein specifically described; hence it will be appreciated that the herein disclosed embodiments are illustrative only, and that my invention is not limited thereto.

I claim as my invention:

1. In a wall structure of the class described, a plurality of uprights arranged in spaced relation and having wall plates seated against and secured to the outer faces thereof, wall panels seated against the inner faces of the uprights, channels fitting over the edges of said panels, and a plurality of clips for securing the panels to the uprights, each clip comprising a body portion of angular cross-section having a depending

tongue at one end received in one of said channels, and a similar tongue being formed at the opposite end of said body portion and received between the outer face of one of the uprights and a wall plate, thereby to secure the panels in position against the uprights.

2. In a wall structure of the class described, a plurality of uprights arranged in spaced relation and having wall plates seated against and secured to the outer faces thereof, wall panels seated against the inner faces of the uprights, channels fitted over the horizontal edges of said panels, and a plurality of metallic clips for securing the panels to the uprights, each clip comprising a body portion of right angular cross section formed with a depending tongue at one end received in one of said channels, and said body having a tongue at its opposite end disposed at an angle to said first mentioned tongue and received between the outer face of an upright and one of the wall plates, thereby to secure the wall panels in position against said uprights.

3. In a wall structure of the class described, a plurality of spaced uprights, wall plates seated against the outer faces of said uprights, clamping members secured to the uprights and engaging the contiguous edges of adjacent wall plates, thereby to secure them to the uprights, insulating panels seated against the inner faces of the uprights, a double channel comprising oppositely facing channels for receiving the contiguous edges of adjacent insulating panels, and a plurality of metallic clips for securing the insulating panels in position against the uprights, each clip comprising a body portion formed of sheet metal bent longitudinally to provide right angularly disposed webs, one of said webs being formed with a downwardly extending tongue at one end received in one of said channels, and a similar tongue being formed on the other web of the clip body and received between an upright and one of the outer wall plates, thereby to secure the insulating panels in position against the uprights.

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