

Sept. 26, 1967

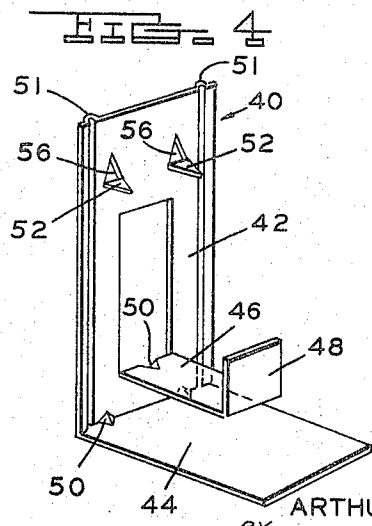
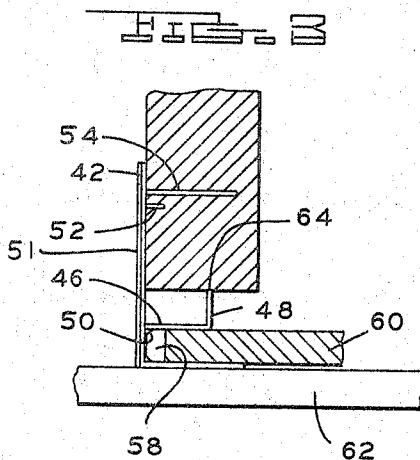
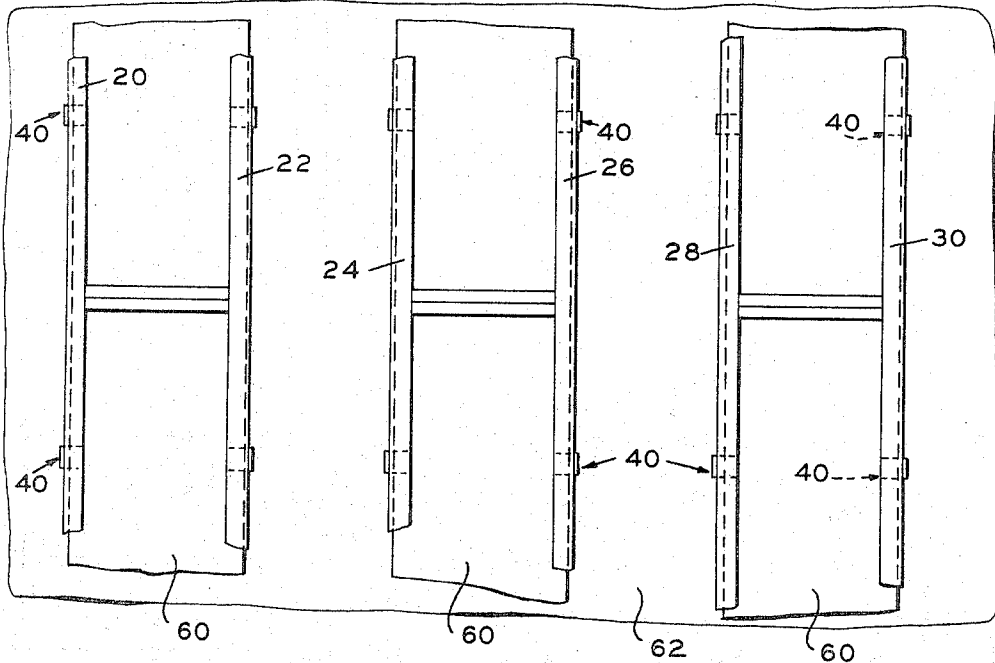
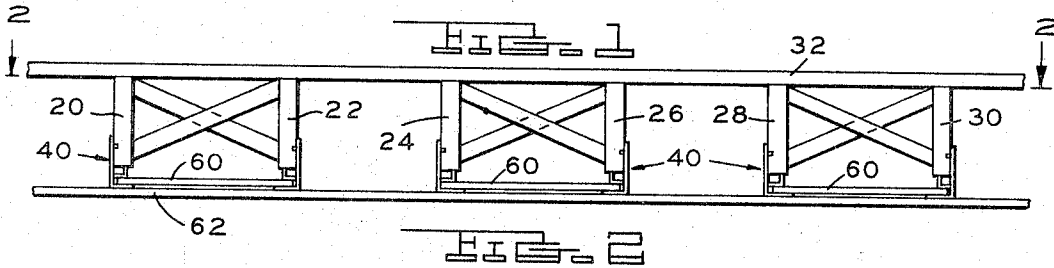
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3,343,329

SPACER-SUPPORT CLIP FOR CEILING CONSTRUCTION

Filed May 14, 1964

2 Sheets-Sheet 1



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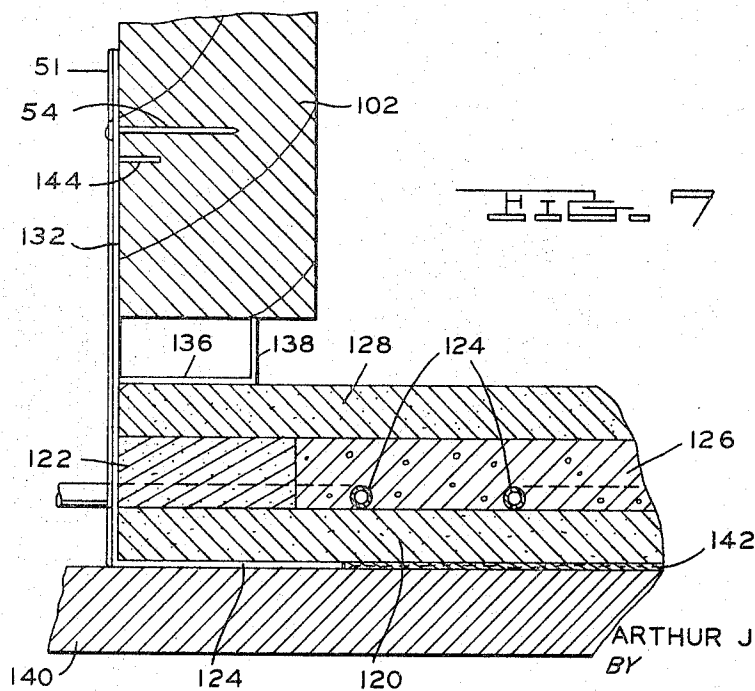
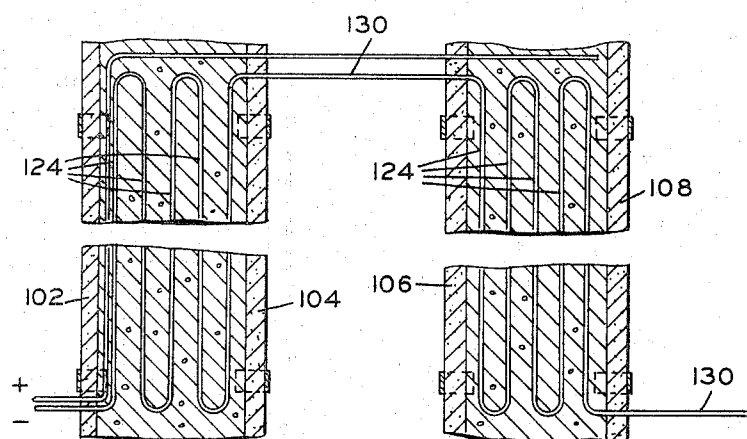
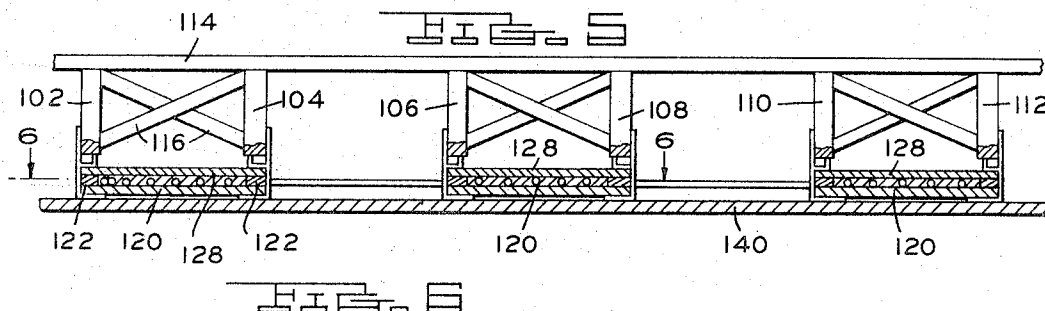
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SPACER-SUPPORT CLIP FOR CEILING CONSTRUCTION

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2 Sheets-Sheet 2



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SPACER-SUPPORT CLIP FOR CEILING CONSTRUCTION

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1 Claim. (Cl. 52-677)

This invention relates to a ceiling construction and more particularly to that type of ceiling which is sometimes called acoustical or soundproofing ceiling.

The object in constructions of this kind is to separate the ceiling panels themselves from the cross beams or joists so that sound will not transfer through the ceiling as readily as if the two were solidly fastened together. Examples of constructions of this kind are found in Balduf 1,935,536 issued Nov. 14, 1933 and Balduf 1,938,680 issued Dec. 12, 1933.

It is an object of the present invention to provide an improved construction whereby ceiling panels can be suspended under parallel joists in a rapid fashion and in such a way that the ceiling panels are spaced from the joists in a definite gauged dimension.

It is a further object to provide a ceiling construction wherein no nails are required to be driven into the ceiling panels in order to support them. This is advantageous since many times these ceiling panels are fragile and are apt to crack or chip when nails are driven into them. This also has the advantage that there are no nails that must be covered by paint or plaster.

Another object of the invention is the provision of a suspension device which is readily attached to joists in a manner to support a primary ceiling supporting strip and one which can be easily tacked up by an operator and subsequently nailed to the joist.

It is a further object to provide a suspension device for an acoustical ceiling which has a built-in, spacing gauge element which automatically, without a measurement on the part of an operator, will suspend the ceiling in spaced relation to the bottom edges of the joists.

Another object is a suspension device wherein the gauging means which initially lies in contact with the bottom edge of a joist will, due to the support of the weight of the ceiling, be slightly separated to reduce the actual contact of the ceiling with the joists.

It is a further object of the invention to provide a ceiling construction which is adapted for utilization with resistance heating of the panel type wherein resistance wires are disposed in the ceiling to obtain a radiant heating source. The particular construction herein to be described is especially adapted to this type of heating system.

Other objects and features of the invention relating to details of construction and operation will be apparent in the following description and claim.

Drawings accompany the disclosure and the various views thereof may be briefly described as:

FIGURE 1, a sectional view of an acoustical ceiling utilizing the suspension device of the present invention.

FIGURE 2, a sectional view on line 2-2 of FIGURE 1.

FIGURE 3, an enlarged view of the suspension device in position.

FIGURE 4, a perspective view of the suspension device

FIGURE 5, a sectional view of a ceiling incorporating a radiant heating panel area.

FIGURE 6, a sectional view on line 6-6 of FIGURE 5.

FIGURE 7, an enlarged section of a supporting clip to be used in connection with the radiant heating construction.

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Referring to the drawings:

In FIGURE 1, parallel joists 20, 22, 24, 26, 28 and 30 are shown supporting a floor 32. At spaced intervals on these joists are suspension units 40 shown in FIGURE 4. These suspension units have a vertical plate 42 with a horizontal platform shelf 44 at right angles thereto. A strike-out from plate 42 forms a second shelf 46 raised from shelf 44 and has a small upturned gauge tab 48. At the corners of the bent portions are strike-in dimples 50 which serve to rigidify the corner against bending. Shallow ribs 51 are formed in the plate 42 adjacent the edges to make the plate more rigid.

Also, in the top of plate 40 are triangular strike-in tabs 52 which have sharp points so that the tips may be driven into a joist as shown in FIGURE 3 to temporarily support the suspension unit until holding nails 54 can be driven through the holes 56 to solidly support the suspension unit on the joist.

In positioning the suspension unit, it will be seen that the upturned tab 48 serves as a gauge member to position the suspension unit vertically relative to the bottom edge of the joist. These units 40 are spaced longitudinally of a particular joist 20 as shown in FIGURE 2 and may be positioned longitudinally on an adjacent parallel joist such as shown on joist 22 in FIGURE 2.

The span between adjacent joists can be either one joist, two joists, or three joists. The positioning of the suspension units, as shown in FIGURE 3, provides a supporting opening 58 which receives a primary supporting strip 60 at its edges, this strip extending longitudinally of the joists. As illustrated, this strip 60 spans one space between the joists, but it can span either a single space or additional multiple spaces.

The ceiling is completed by gluing, with a suitable adhesive such as contact cement, large secondary ceiling panels 62 to the primary supporting strip panels 60. It is preferable that the larger panels overlap at some point between the edges of a primary panel and any suitable contact adhesive can be utilized to apply the secondary and finish ceiling panels to the primary panels 60.

It has been found that upon supporting the primary and secondary panels 60 and 62 on the suspension units that there is generally a slight sag of the suspension unit, due to a settling of plate 42 on nails 54 and due to slight bending of plate 42, so that edge 64 of the tab 48 will drop slightly from its position of contact with the lower edge of the joist. This reduces the physical contact of the ceiling with the joist and thus reduces the noise transfer through the ceiling. The additional spacing from the joists generally throughout the ceiling provides an excellent sound barrier, particularly useful in multiple housing units. The structure can be used also on vertical walls if desired.

In FIGURE 5, a modified structure is shown wherein joists 102, 104, 106, 108, 110 and 112 are spaced normally along a building construction supporting the floor 114 for a second story and having reinforcing cross members 116 in the standard way. The construction in FIGURE 5 is intended to be used with a radiant heating panel system. This is accomplished by developing panels which contain parallel runs of resistance elements commonly used in radiant heating. These can be built up at the site of the construction but it is preferable that they be preformed to facilitate assembly.

As shown in the drawings (FIGURES 5 to 7), the panels comprise a longitudinal strip 120 which is approximately the width of the space of a single span of a pair of joists from outside to outside. This strip 120 is a piece of building sheet such as Sheet Rock (trademark) approximately $\frac{3}{8}$ " in thickness and it is provided on its top surface at each edge with a fairly narrow strip 122 of spacing material.

In the recess between the spacer strips 122, there are disposed a plurality of spaced runs 124 of resistance materials suitably insulated and lying on the top of the surface of the spanner strip 120. It is preferable that the resistance material be a continuous strip throughout an entire ceiling construction to avoid the necessity of joints in the conductive material. After the conductive material 124 is disposed in parallel relation on the top of panel 120, a body of dry wall cement 126 is plastered over the conductive wires to fill in the space between the spacer strips 122. Then a capping panel 128 is disposed over the entire surface of the composite panel to close in the dry wall cement. Panels 120 and 128 are preferably joined to each other and to the spacer strips 122 by an adhesive cement although they can be mechanically joined by stapling if desired.

It is preferable, however, that mechanical means are not used to avoid any injury or contact with the electrical conductive wires. When a plurality of these prepared panels are built up, it will be seen that they will each be connected to each other by a short run of conductive material 130. It will be necessary to mount them more or less simultaneously in a proper manner so that there will be no injury to the conductive wire. The mounting is accomplished with clips of a nature previously described with the exception that these clips have a broader receptacle area for the panels to be supported.

As shown in FIGURE 7, the clip has a vertical plate 132 forming the one leg and a horizontal plate 134 forming the other leg. The strike-out from the vertical plate forms the second shelf 136 having the upturned gauge tab 138. The space between the lower shelf leg 134 and the upper shelf 136 is wide enough to receive the composite panel as shown in FIGURE 7. Once the composite supporting panels are mounted as shown in FIGURE 5, the finish ceiling plate or panel 140 formed of a building sheet such as Sheet Rock (trademark) or what is sometimes referred to as laminate dry wall is glued to the supporting panels 130 at 142 with a suitable contact adhesive. In order to bear the heavier load which is inherent in the structure just described, it would be best to have the supporting clips perhaps formed of slightly heavier gauge of metal than would be required for a single panel structure of the type illustrated in FIGURE 1. The plate 132 has tabs 144 formed on it in the same manner as the previously described unit and it would be similarly nailed to the joist through the openings from which the tabs have been struck. The plate 132 would also be provided with the edge ribs 51 to make the plate more rigid.

It will be understood, of course, that the cross runs 130 between the heating panels would be suitably coated with dry wall cement and sheathed with necessary strips of said rock to provide a covering similar to that in the composite strip panels.

Reference is made to my co-pending application Ser. No. 250,832, filed Mar. 10, 1964, directed to a related structure.

I claim:

For use in acoustical building construction for the space-mounting of a wall panel, a supporting clip comprising:

- (a) an L-shaped flat, sheet material supporting plate having one leg formed with longitudinal reinforcing ribs adjacent the edges thereof,
- (b) triangular strike out tabs cut from and adjacent the free end of said one leg extending in the direction of the second leg of said plate adapted to be driven into a joist,
- (c) a combination recess-forming and spacing strip struck from said one leg having a relatively long portion extending over, parallel to, and spaced from, the said second leg of said plate, and a relatively short portion extending perpendicular to and away from said second leg,

wherein said short portion forms a spacing tab to locate and space a wall panel having an edge lying between and supported by said second leg and said relatively long portion of said spacing strip.

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