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Astedt et al.

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[54] **HOLDING CLIP FOR PANEL BOARD IN CEILING GRIDS**

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[21] Appl. No.: **402,893**

Related U.S. Application Data

[63] Continuation of Ser. No. 112,928, Feb. 5, 1971, abandoned.

[52] **U.S. Cl.** **52/489,** 52/502, 52/715

[51] **Int. Cl.** **E04b 1/40,** E04b 5/52

[58] **Field of Search** ..... 52/489, 502, 488, 498, 52/495, 484, 712, 714, 715; 24/81 B, 81 CC; 248/317, 342, 343

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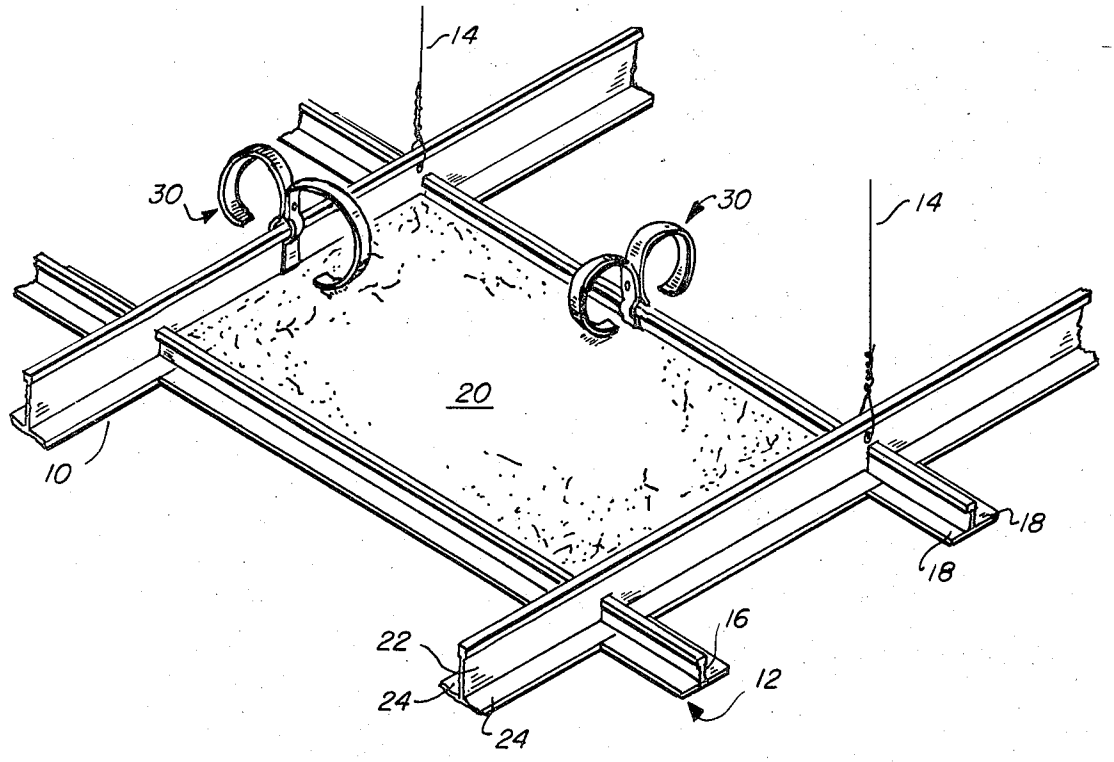
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[57] **ABSTRACT**

A holding clip of spring steel is provided for ceiling suspension systems in which the clip is secured to the runners of the grid and resiliently bears against the back of the panels. Any upward pressure, such as from, brooms, basketballs in gymnasiums, and the like, is absorbed by the spring action of the clip which prevents the board from being dislodged from the grid.

3 Claims, 5 Drawing Figures



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SHEET 1 OF 2

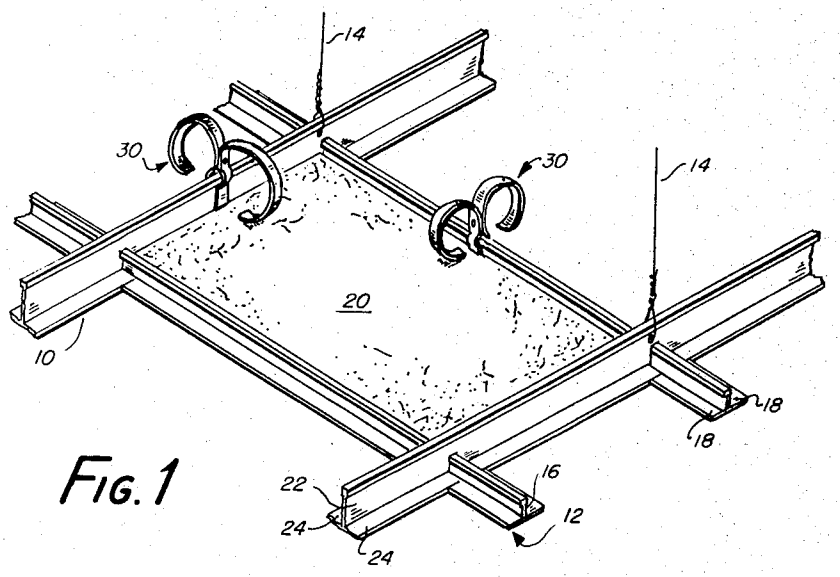


FIG. 1

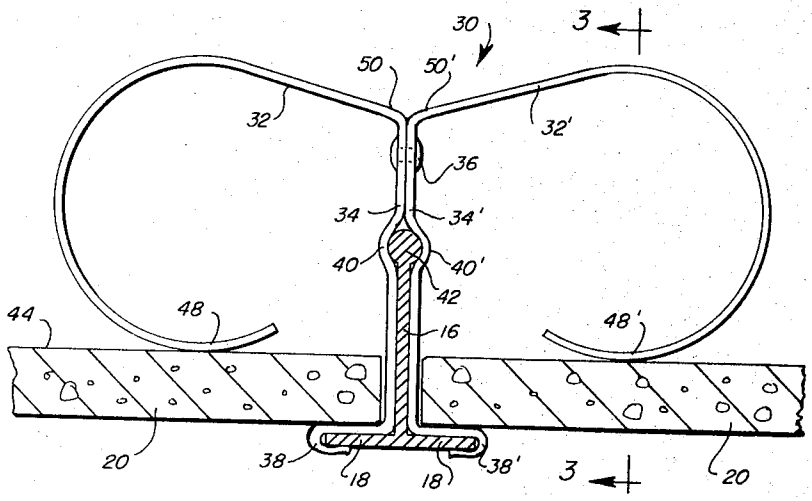


FIG. 2

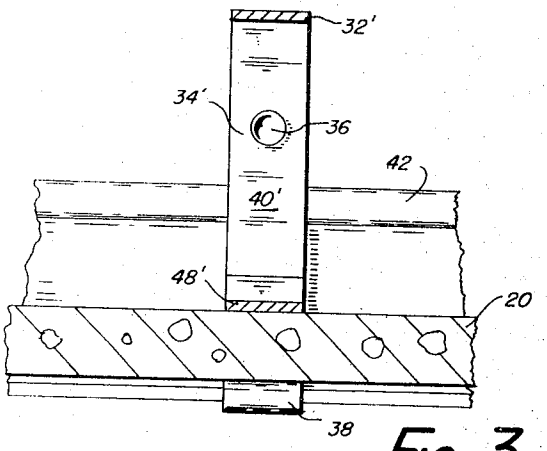


FIG. 3

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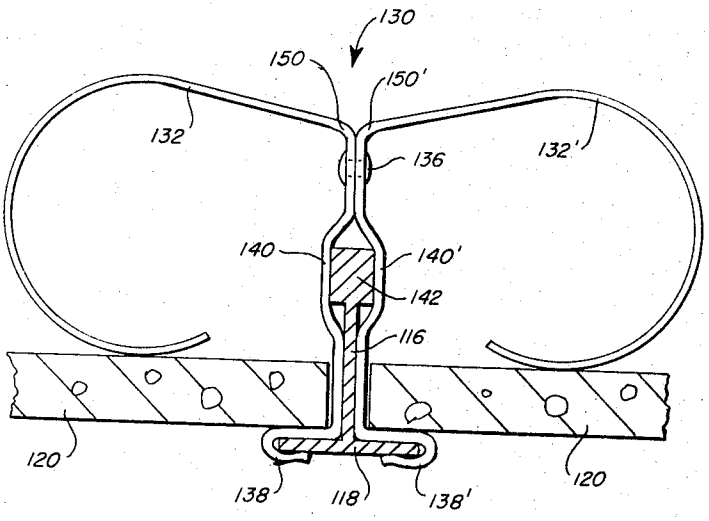


FIG. 4

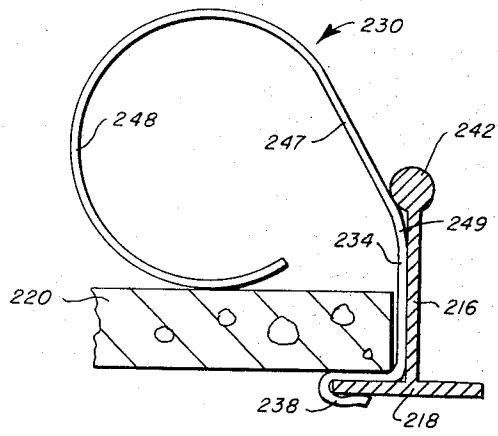


FIG. 5

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HOLDING CLIP FOR PANEL BOARD IN CEILING GRIDS

This is a continuation of application Ser. No. 112,928, filed Feb. 5, 1971, and now abandoned.

In recent years ceiling installations in which panel boards are supported upon suspension grids have gained considerably in popularity for a number of residential and commercial applications. While there are many reasons for this increased popularity, one significant reason is the economy, particularly in large open spaces, when compared with alternative ceilings such as ceiling tiles, or plaster.

Still another reason for the popularity of such ceiling systems is the ease with which the panels may be removed for maintenance or installation of heating, cooling, or ventilating ducts, electrical wiring, the pipes for plumbing, and the like which are positioned behind the ceiling.

One locality where such ceilings are advantageous is in gymnasiums, basketball and handball courts, and the like; however, in such locations the ceiling panels are prone to being struck by persons or objects beneath the ceiling thus creating damage to the panels, knocking the panels from their position, misalignment of panels, and the like.

One of the objects of this invention is to provide a clip for the suspension system that will absorb the shock when a panel is struck thus preventing damage to the panel.

Another object of the invention is to provide a clip that retains the panel in position against dislodgement or misalignment.

These and other objects of the invention will be obvious to those skilled in the art from the following specification and drawings in which:

FIG. 1 is a view from above of a portion of a ceiling utilizing the invention,

FIG. 2 is an enlarged side elevation of the clip of the invention in place,

FIG. 3 is taken along line 3—3 of FIG. 2

FIGS. 4 and 5 are side elevations of modifications of clips of this invention.

Suspended ceilings, broadly, are well known in the art. As shown in FIG. 1 such ceilings comprise main runners 10 joined at intervals by cross runners 12. The main runners are supported by wires 14 attached to suitable structures, such as concrete decks (not shown), arranged above the ceiling. The main runners 10 extend the full length or width of the room and have attachment openings at intervals for cooperating attachment ends on the cross runners 12. The joint arrangements between the ends of the cross runners 12 and the main runners 10 are not shown in detail since a number of them are well known in the art and they do not constitute a part of this invention.

Each of the runners 10 and 12 comprises an elongated metal member that is an inverted "T" in cross section as clearly shown in the drawings. For example, the cross runners 12 have vertical webs 16 and laterally projecting horizontal flanges 18. The main runners 10, similarly, have vertical webs 22 and horizontally extending flanges 24. Supported horizontally on the flanges 18 and 24 are panels 20 of any of several commercially available varieties including panels of resin bonded glass fibers, felted bound fiber boards, molded plastic and the like.

All of the above, just described, is conventional in arrangement and construction. The holding clip of the invention is generally indicated by the reference numeral 30 in FIG. 1. The details of the holding clip are best shown in FIG. 2.

In FIG. 2 the holding clip 30 is shown as comprising two complementary and actually identical bent spring steel members 32 and 32'. Each of the spring steel members 32 and 32' has a vertical portion 34, 34' respectively. The vertical portions 34, 34' are joined together by means of a pop rivet 36 passing through suitable openings in the members 34, 34'. Other means of securing the spring steel members 32, 32' together may be utilized such as spot welding the location where the rivet 36 is shown in FIG. 2, or by interlocking slots and tongues, or any other similar system. It is only necessary that the members 32, 32' be secured together generally in the area of the pop rivet 36.

The vertical sections 34, 34' have, at their lower ends, laterally extending portions providing U-shaped gripping members 38, 38' respectively. A cross runner 12 is shown in FIG. 2 as comprising the vertical web 16 and the horizontal flanges 18. The vertical portions 34, 34' of the clip are positioned flat against the vertical web 16 and are shaped with a curved detent 40, 40' respectively in order to accomodate the bead 42 at the top of the web 16. The shape of this bead is shown as being generally circular in cross section; however, other suspension systems commonly used have beads 42 that are rectangular in cross section, or other like shapes. The detents 40, 40' serve to springingly and frictionally engage the bead 42 in order to hold the clip 30 in place. It will be appreciated that the members 32, 32', being secured together only above bead 42 (at the location indicated by the numeral 36) may be sprung apart at their lower ends in order to pass over the bead 42 until it is engaged within the detents 40, 40' when the clip 30 is being placed. When being placed the lower legs of the vertical members 34, 34' are spread apart in order that the U sections 38, 38' may be frictionally engaged over the flanges 18 of the runner. The flanges are, of course, frictionally engaged within the U-shaped terminal portions 38, 38' since the U-shape is dimensioned to be very tight and the side arms thereof must be sprung outwardly somewhat to engage the flanges 18 of the runner. The terminal portions 38, 38', engaging the flanges 18, and the detents 40, 40' engaging the bead 42 securely hold the entire clip 30 against movement.

The members 32, 32' have curved springing portions 48, 48' shaped as shown in FIG. 2 to engage the back surfaces 44, 44' of two adjacent panels 20, 20' respectively.

It will be seen that when an object such as a basketball, handball, broom, or other like hard object strikes the front face of one of the panels 20, 20', the panel will be moved upwardly against the urging of the spring portion 48 or 48' of the clip 30. Being of spring metal the clip will flex and give thus absorbing the shock of the blow while at the same time maintaining the panel in its relationship to the suspension system runners 10 and 12. Accordingly, the flexing of the clip 30 will prevent damage to the panel by permitting its controlled movement upwardly, while at the same time preventing the panel from becoming dislodged or badly misaligned. That is to say that it will return the panel 20 or 20' back to its rest position shown in FIG. 2 under the

urging of the springs **48, 48'**. Of course, the members **32, 32'** and their curved spring portions **48, 48'** will flex upwardly and there will be also some flexing at the corners **50, 50'** depending upon the force of the blow. As indicated above, the entire clip **30** (including both members **32, 32'**) is constructed from strip spring steel in order to accomplish the desired results.

It will be appreciated that the clip **30** can be used on the cross runners **12** or on the main runners **10,** or both in order to urge the panels **20** downwardly. In FIG. **1** clips **30** are shown on both runners **10** and **12**; however, often it is only necessary to use clips **30** only on the main runners **10** or the cross runner **12.** Additionally, while the dual type clip shown in FIG. **2** is preferred, it is possible to use merely one half of the clip (such as the left half with the numerals that do not have a prime) if desired. Such a half or single clip (as opposed to the dual clip shown) would be advantageously useful at the margins or borders of a room where L-shaped channel pieces support the panels.

It will be appreciated that variations in the shape of the elements, particularly of the vertical portions **34, 34'**, may be required, or desired, particularly where the shape of the bead **42** is different.

One modification of the clip is shown in FIG. **4.** In FIG. **4** all of the portions corresponding to the similar portions in FIG. **2** are shown with the addition of the digit **1** before the numerals. For example, the clip is generally indicated by the numeral **130** in FIG. **4** corresponding to clip **30** in FIG. **2.** The significant difference in the clip of FIG. **4** from that of FIG. **2** is the shape of the detent **140, 140'** which is designed to accept various shaped beads **142** of various sizes.

In FIG. **5** is shown a single or one-sided clip **230** having a vertical portion **234** and a lower U-shaped flange embracing portion **238.** The flange **218** is received frictionally within the U-shaped portion **238** and holds the vertical portion **234** tightly against the web portion **216** of the runner. The curved springing portion **248** extends from a bend **249** at the top of the vertical portion **234.** The curved springing portion **248** is curved downwardly to engage the back surface of the panel **220** in the same manner as the curved portions **48, 48'** shown in FIG. **2.** It will be appreciated that the transitional portion **247** between the curved portion **248** and the vertical portion **234** will permit the use of beads **242** of a variety of shapes and sizes.

It will also be understood that the clip **230** of FIG. **5** is a single clip as mentioned above and serves to illustrate the manner in which one half of a dual clip (such as the dual clips of FIGS. **2** and **4**) may be used.

In the above descriptions all of the variations have laterally extending U-shaped gripping members for the flanges **18** of the runners. This arrangement permits the two vertical legs such as the legs **34, 34'** to be spread apart at the bottom after installation and the whole clip pushed upwardly when access is desired to the area behind the ceiling panels, thus retaining the access feature that has contributed considerably to the popularity of such types of ceilings. It will be appreciated, that this arrangement allows one side (the lower side of the U-shaped grippers to be exposed. In areas where such exposure is deemed seriously detrimental to the aesthetics of the ceiling, or for other reasons, these laterally extending U-shaped members may be deleted and other means of fixing the clip to the runner **12** provided. For example, a rivet, bolt, machine screw, or the like could be passed laterally through the vertical members **34, 34'** with the web **16** positioned between them thus to secure the vertical members **34, 34'** to the web **16** and eliminating the need for the grippers **38, 38'**. Such an arrangement makes access more difficult, but not impossible since by pushing upward on the boards the machine screw or other fastener could be exposed for removal. Accordingly, while the illustrated clips with the U-shaped gripper members is preferred, other arrangements are possible. It is only necessary that some means of securing the clip to the suspension grid be provided, preferably one that permits removal of the panels when desired.

As disclosed, the spring portion **48, 48'** is shown as engaging the back surface of the panels; however, it will be appreciated that such spring members **48, 48'** could be positioned slightly above the back surface of the panels thus permitting the panels to move upwardly somewhat before being engaged against the spring members. In either event, the springs function to absorb the shock and to maintain the panels in place.

The word "panels" as used herein is intended to include all such panels as may be supported by suspension grids of this type including fibrous panel boards, plastic panels, and the like and also including a number of light fixtures that have been designed to be incorporated into such grid systems. The clip will work equally well with cooperating portions of such light fixtures.

We claim:

1. A ceiling comprising an exposed suspension grid having main runners and cross runners, said runners having a vertical web and horizontally extending flanges forming an inverted "T" in cross section, panel boards supported by the horizontal flanges of said suspension grid each of said panel boards having a front face and a back face, a clip for holding the panel boards in the ceiling suspension system comprising two strips of spring steel, each of said strips having a bent laterally extending U-shaped portion which frictionally engages a horizontal flange of an inverted "T" bar, each of said strips having a vertical portion, the vertical portions of said strips being secured together, and each of said strips having a spring portion which engages the back of a panel board.

2. A ceiling comprising an exposed suspension grid having main runners and cross runners, said runners having a vertical web and horizontally extending flanges forming an inverted "T" in cross section, ceiling panels supported by the horizontal flanges of said suspension grid, each of said panels having a front face and a back face, a holding clip, said clip having two complementary spring steel elements, each of said elements having a U-shaped portion frictionally embracing a flange of one of said runners in the bight of the "U", the webs of said runners having an enlarged bulb portion, each of said elements having a vertical portion, each of said vertical portions having a detent, said vertical portions being secured together at a point above said detents, said vertical portions cooperatively frictionally embracing the web of said one runner with the bulb of said web being embraced by the said detents of said vertical portions, each of said elements having a board engaging spring portion, said spring portions resiliently engaging the back faces of adjacent panels positioned on opposite sides of said one runner, whereby upon striking the front face of said panels, said panels may move upwardly against the urging of said spring

portions which spring portions absorb the shock and prevent dislodgement of said panels.

3. A shock absorbing clip for a ceiling having panels resting in an exposed suspension system made up of runners having horizontal flanges and vertical webs said clip comprising two strips of spring steel each of which has a vertical portion said two strips of steel being joined to each other in the vertical portions and each of said strips comprising a curved portion, said curved portion beginning above the point of joining of the vertical portions, the curved portions starting by diverging in an upward and then a horizontal direction from each other and continuing downwardly in curved manner and then being curved inwardly so that they are approaching each other and then being curved upwardly to their respective ends said clip being removably secureable to a said runner, the inwardly extending part of the curved portion being adapted to engage the back of a panel resting on said runner, said curved portion being such as to permit upward movement of said panel relative to said runner when said panel is struck on the front face thereof while returning the panel to its proper position after it has been struck, whereby panels in said ceiling may absorb shocks to their front face without being damaged or dislodged from said suspension systems.

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