United States Patent [19]

Jacobs

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[54] **MULTIPLE DETENT RETAINING CLIP**

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[73] Assignee: **Prudential Lighting Corporation,** Los Angeles, Calif.

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[52] **U.S. Cl.** ..... **24/73 B,** 240/9 R

[51] **Int. Cl.** **A44b 21/00,** F21s 1/02

[58] **Field of Search** .. 24/73 B, 81 B, 81 PH, 81 BF, 24/81 PC, 81 PB; 240/9 R, 9 A; 248/343; 287/20.92 J, 20.92 W, 189.35; 52/489

[56] **References Cited**

UNITED STATES PATENTS

2,814,840	12/1957	Sears	287/20.92 J
3,284,844	11/1966	Seckerson	24/81 B
3,415,018	12/1968	Sutter	240/9 R

FOREIGN PATENTS OR APPLICATIONS

1,364,686	5/1964	France	52/489

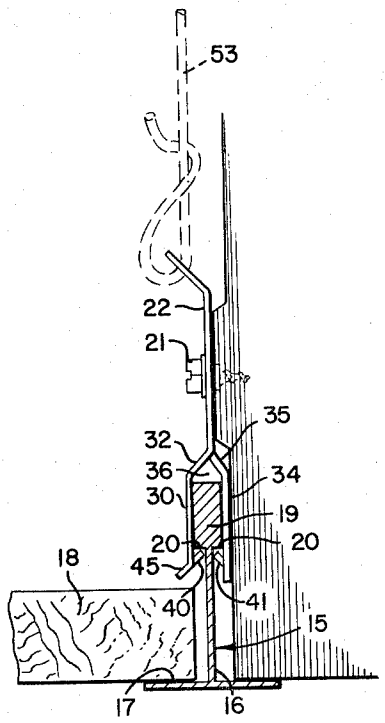
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Attorney, Agent, or Firm—Miketta, Glenny, Poms & Smith

[57] **ABSTRACT**

A multiple detent retaining clip having a planar body portion which is adapted to be secured to the sheet metal housing of, for example, a lighting fixture which is a portion of a suspended ceiling so as to support the lighting fixture from inverted T-bars forming a part of a grid type suspended ceiling, the clip having three planar gripping legs which are integral with the body portion extending in the same general direction, the gripping legs at opposite ends being laterally offset from the plane of the body portion in one direction and other gripping legs being laterally offset in an opposite direction so as to define a channel and each of the gripping legs having a detent projecting inwardly so that the gripping legs may be fitted over the enlarged head of the inverted T-bar of the grid ceiling thereby supporting the lighting fixture from the ceiling grid members.

9 Claims, 5 Drawing Figures



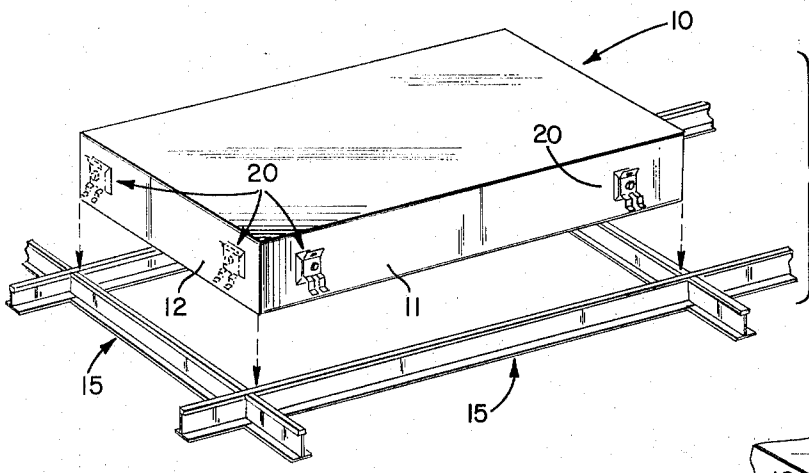


FIG.1

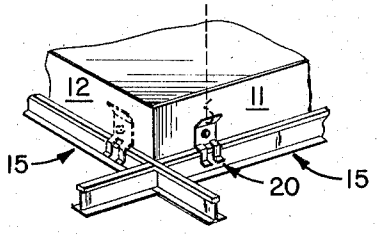


FIG.2

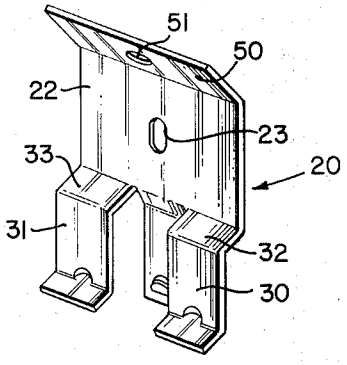


FIG.3

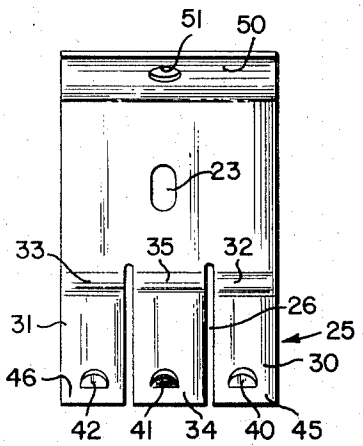


FIG.4

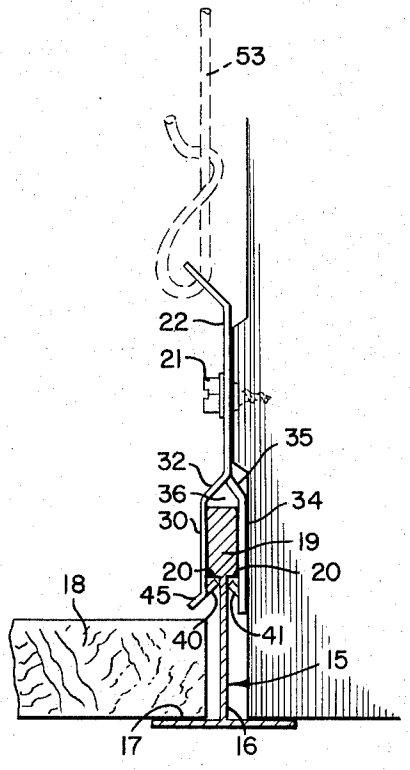


FIG.5

MULTIPLE DETENT RETAINING CLIP

BACKGROUND AND PRIOR ART

It has become quite common in commercial, office, and similar buildings to employ what is commonly referred to as a suspended type ceiling. Such suspended ceiling comprises a grid work of grid members which may be inverted T-bars positioned in a latice-type network and which are suspended from the permanent building ceiling. Within the soffit, i.e., the space between the plane of the suspended ceiling and the permanent ceiling, the heating and ventilating ducts are positioned and the suspended ceiling includes lighting fixtures which are supported from the grid members as well as air intake and exhaust outlets which may also be supported from the grid members. The ceiling space not occupied by the lighting fixtures or heating and ventilating outlets may commonly support acoustical tile or similar ceiling coverings.

It is of course imperative that the lighting fixtures as well as the other housings which are supported by the grid members must be connected to the T-bars by clips or fasteners which satisfy a variety of requirements. First, and most important, the clips or fasteners must rigidly and safely secure the housing to the grid members so that the housing will not be inadvertently dislodged from the ceiling during the life of the building. Secondly, such clip or fastener must permit the housing to be released from the grid members since during remodeling or repair or for other reasons it may be necessary to move the housing from its particular grid location without disturbing the grid members. Thirdly, it is desirable that the clip or fastener be easily and simply secured to the housing as well as to the grid members so as to facilitate installation of the housings in the suspended ceiling. It will also be apparent that because of the large number of such clips or fasteners it is highly desirable that such devices be inexpensive in large quantities.

Various types of clips, fasteners, and the like have been devised in an attempt to satisfy the requirements generally described above for a housing retaining clip with varying success. It will be apparent that such common fasteners such as screws are entirely unsatisfactory because of the time required for installation, etc.. An example of a retaining clip for use in a suspended ceiling to support a housing such as a lighting fixture is disclosed in my prior U.S. Pat. No. 3,371,900. While this clip has certain advantages over other clips and fasteners available, it is believed that the clip of my present invention includes further advantages not the least of which is the added security against inadvertent dislodging of the lighting fixture housing.

GENERAL SUMMARY OF THE INVENTION

In light of the above background and brief description of prior art devices, it will be seen that one advantage of the present invention is to provide a multi-detent retaining clip which can be used to securely support a housing, such as a lighting fixture, in a suspended ceiling from grid members which comprise inverted T-bars having enlarged heads. The retaining clip of the present invention has the advantage of securely and releasably connecting the clip and the housing to which it is attached to the inverted T-bar such that the clip cannot be easily dislodged from the T-bar because of the engagement of detents on the clip and the enlarged head of the T-bar.

Generally, in the exemplary embodiment disclosed in the present application there is shown a multiple detent retaining clip which comprises a planar body portion that may be adapted to be secured to an object to be retained. At least three substantially planar gripping legs extend from the planar body portion and the planar body portion and the gripping legs may be integral and unitary and formed from a sheet or plate of resilient metal. The gripping legs extend in one general direction substantially parallel to one another and the legs at the opposite ends are laterally offset from the plane of the body portion in one direction and at least one of the other gripping legs are laterally offset from the plane of the body portion in the other direction so as to define a channel for receiving an object. Each of the gripping legs may be provided with a detent that projects inwardly into the channel whereby an object may be slidably moved between the gripping legs in a direction toward the body portion but is subsequently retained against movement away from the body portion until the legs are spread.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a lighting fixture housing and a portion of a grid system or network of a suspended ceiling showing the housing in the position preparatory to its securement to the grid members, the housing having a plurality of exemplary multiple detent retaining clips constructed in accordance with the present invention;

FIG. **2** is a partial persepctive view of the housing and grid network shown in FIG. **1** showing the housing in position and the retaining clips engaging the grid members;

FIG. **3** is a perspective view of an exemplary multidetent retaining clip constructed in accordance with the present invention;

FIG. **4** is a front elevation view of the clip shown in FIG. **3**; and

FIG. **5** is an end view of a clip shown in FIGS. **3** and **4** secured to the lighting fixture housing and engaging the grid members when the housing is in position as shown in FIG. **2.**

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGS. **1** and **2**, there is shown a lighting fixture housing indicated generally at **10** having side-walls **11** and end walls **12.** Such lighting fixture housing is generally fabricated from sheet metal and while the present invention was particularly adapted for securing lighting fixture housing in a grid ceiling, it will be understood that other types of housing such as ducts and the like used in heating and ventilating systems may also be supported with retaining clips of the present invention. It will be understood by those skilled in the art that such retaining clips have even broader application.

The fixture may be supported in a suspended ceiling such that the plastic lens or diffuser of the fixture is flush with the plane of the suspended ceiling. The suspended ceiling is supported by a grid or network of grid members which may be inverted T-bars indicated generally at **15** in FIGS. **1** and **2** and shown in detail in FIG. **5.** The inverted T-bar includes a leg or web **16** that is

vertically disposed and side flanges 17 that are in the plane of the suspended ceiling. In FIG. 5, it is shown how the flange 17 of the inverted T-bar may support the edge of a ceiling acoustic tile block 18. At the upper end of the vertical web or leg 16 there is an enlarged head 19 which is integral with the leg 16. The enlarged head or bead 19 defines a pair of shoulders 20 facing downwardly when the T-bar 15 is in position.

The fixture 10 may be supported from the grid members 15 by a plurality of clips indicated generally at 20 which may be secured to the sides 11 at two places as shown and to the ends 12 also at two places. The clips 20 are secured to the lighting fixture housing by a fastener such as the screw 21 shown in FIG. 5.

Attention is now drawn more specifically to the retaining clip 20, as seen best in FIGS. 3 and 5. The exemplary clip 20 is fabricated from a strip or sheet of resilient metal and may be stamped such that each clip 20 is a unitary integral piece having a shape and configuration as herein described. The clip 20 has a planar main or principal body portion 22 which is substantially flat and rectangular. The body portion 22 may be provided with means for attaching the clip to the housing and in the exemplary embodiment such means comprises the hole 23 through which the screw 21 may pass as seen best in FIG. 5. Extending in one direction from the body portion 22 is a plurality of gripping legs indicated generally at 25 which extend in one general direction from the body portion 22 such as downwardly as seen in FIGS. 4 and 5, each of the legs being a planar rectangular piece of metal and each being parallel to one another. It will be readily seen that the gripping legs 25 may be formed by stamping the sheet metal strip from which the clips are fabricated so as to form a slot such as at 26 between adjacent legs to form the separate legs.

The gripping legs 25 are then formed so that at least two of the legs which are not adjacent to one another will be offset from the plane of the body portion 22. For example, in the exemplary clip 20, the end or outer legs 30, 31, as seen best in FIG. 3, are laterally offset from the plane of the body portion 22 by means of the offset arms 32, 33. At least one of the gripping legs 25 which is positioned between the two legs which are offset in one direction from the plane of the body portion 22 must be offset in the opposite direction. For example, in the exemplary clip 20, a third leg 34 is laterally offset in a direction opposite to the offset of legs 30, 31 by means of an offset arm 35. It will be understood that any number of legs greater than 3 may be employed in the clip providing that at least two legs which are not adjacent are offset in one direction and at least one leg which are between the two legs offset in one direction are offset in the other direction. As in the preferred embodiment, the size and expense of the clip may be maintained at a minimum by employing three gripping legs, the outer legs 30, 31 being offset in one direction and the center or intermediate leg 34 being offset in the other direction. As seen best in FIG. 5, the gripping legs 25 when formed and viewed from the end define a channel 36 which extends longitudinally in the same general plane as the body portion 22 of the clip.

Each of the gripping legs 25 are provided with a detent in the form of a tab such as tabs 40, 41, and 42 on gripping legs 30, 34 and 31, respectively. Each of the tabs are struck from the sheet metal and are in a generally circular shape although it will be apparent that any other shape may be employed. The tabs are each connected at their lower end so that, as viewed in FIG. 5, each tab extends inwardly and upwardly toward the body portion 22 so as to form two inclined surfaces. It will be apparent, as from FIG. 5, that the lateral distance between the inner edges of the upper ends of opposing tabs or detents 40, 41 is less than the lateral distance between the gripping leg 30, 34. The relative dimensions between the tabs and the gripping legs may be varied as desired for particular application as will be apparent to those having ordinary skill in the art, it being further apparent that the lateral distance between the detents or tabs will always be less than the lateral distance between the gripping legs.

At the lower end of each of the legs 30, 31 there may be provided feet such as bent ears 45, 46 and which extend in the same direction as the direction in which the gripping legs from which the feet extend are offset relative to the main body portion 22 of the clip 20. The purpose of the legs will be hereinafter described.

At the upper end of the clip there may be provided means for auxiliary support of the lighting fixture through the retaining clip 20, such as the bent flange 50 having an opening 51. As seen in FIG. 5, where it may be found desirable to support the weight of the fixture or housing by means in addition to the grid members 15 the clip which is attached to the housing may be supported from above by a wire indicated in phantom lines at 53 which is secured through opening 51 in the bent flange 50 of the clip 20, thereby supporting the clip and the housing.

Having described the structure of the exemplary embodiment 20 of the clip of the present invention installation of a housing such as a lighting fixture 10 in a suspended ceiling comprising a plurality of grid members 15 will now be briefly described. To the sides 11 and ends 12 of the lighting fixture housing 10 there are secured at least two clips 20 on each wall. The clips are aligned such that the gripping legs 25 depend downwardly and are securely fastened to the housing through the provision of the sheet metal screws 21 which pass through the opening 23 in the main body portion 22 of each clip 20. When each clip is secured and in place, the lighting fixture housing is then forceably positioned onto the inverted T-bars to the position shown in FIG. 2. Enforcing the housing so that the retaining clips engage the T-bars, it will be appreciated that as the detent tabs 40, 41 are laterally spaced less than the thickness of the head 19 of the inverted T-bar 15 the legs 30, 31, and 34 must be laterally forced apart until the tabs are sufficiently spaced to permit the tabs to pass over the enlarged head of the bar. As the retaining clip is moved downwardly so that the head of the T-bar enters the channel 36 formed between the gripping legs 25 the tabs 40, 41 will pass over the lower edge of the head 19 and will then snap or spring back toward one another to the position shown in FIG. 5. In such position, it will be apparent that the fixture cannot be moved upwardly since the upper edges of the tabs 40, 41 will bear against the shoulders 20 of the head 19 of the T-bar so as to retain the clip in appropriate relation to the supporting T-bars 15.

When it is desired to move the housing relative to the T-bars this may be easily done by removing the acoustic tile 18 which enables the workman to place his fingers beneath the feet 45,46 of the gripping legs 30, 31 permitting the legs to be spread apart a sufficient lat-

eral distance such that the inner upper ends of the tabs **40, 41** will pass around the shoulders **20** of the head **19** of the T-bars **15** so that the fixture and the retaining clip may be moved upwardly.

It will therefore be seen that the exemplary embodiment of the multiple detent retaining clip of the present invention accomplishes all of the foregoing requirements and objects for an inexpensive, easily installed, secure, and safe device. It will be readily understood by those having skill in the art that various changes and modifications of the exemplary embodiment of the multiple detent retaining clip of the present invention may be made without departing from the scope of the invention and while retaining the advantages hereindescribed.

I claim:

1. A multiple detent retaining clip for use in supporting a lighting fixture housing or similar housing in a suspended ceiling grid system comprising:

a planar body portion adapted to be secured to a housing to be retained on the ceiling grid system;

at least three substantially planar gripping legs extending in the same general direction from said planar body portion to engage upon a portion of said ceiling grid system, at least two non-adjacent gripping legs being laterally offset from the plane of said body portion in one direction and at least one of said other gripping legs intermediate said at least two non-adjacent gripping legs being laterally offset in the other direction, each of said gripping legs having a detent projecting inwardly, whereby a second object may be easily slidably moved between said gripping legs in a direction toward said main body portion and is thereby retained by said detents against movement away from said main body portion, and means associated with said clip body portion for securing the clip to a wire hanger suspended from above the grid system.

2. The multiple detent clip of claim **1** wherein said planar body portion and planar gripping legs are integral.

3. The multiple detent retaining clip of claim **2** wherein said integral body portion and gripping legs are fabricated from a single sheet of resilient metal.

4. The multiple detent retaining clip of claim **3** wherein each of said detents are struck from its respective leg so that said detent is inclined inwardly and toward said body portion.

5. The multiple detent retaining clip of claim **4** having three gripping legs, the gripping legs at opposite ends each having feet comprising an end portion of each leg bent in said one direction.

6. A multiple detent retaining clip for use in supporting a lighting fixture or similar housing in a suspended ceiling wherein the ceiling includes a grid system composed of inverted T-bars, each of the T-bar vertical legs terminating in an enlarged head or bead and the flanges thereof lying in the plane of the ceiling, comprising:

a unitary stamped resilient rectangular metal plate having a planar body portion including means for securing the body portion to the side or end wall of the housing, at least three substantially planar gripping legs extending in parallel relation from one edge of said planar body portion, at least two spaced apart gripping legs being laterally offset from the plane of said body portion in one direction and at least one of the other gripping legs being laterally offset from the plane of said body portion in the other direction, said at least one leg positioned between said two spaced apart legs, said legs defining a longitudinally extending channel generally in the plane of the body portion, each of said gripping legs having a detent projecting inwardly and toward said body portion, whereby when said clip is secured to the housing with the gripping legs depending downwardly the legs may be forced over the enlarged head of the inverted T-bar to move the detents outwardly until the detents pass over the enlarged head whereupon the legs will spring back toward one another such that the upper ends of the detents are spaced below the head of the inverted T-bar preventing the housing and clip from being moved upwardly off of the inverted T-bar, and means integral with said clip for securing the clip to a wire hanger suspended from the building ceiling.

7. The multiple detent retaining clip of claim **6** wherein each of said detents comprises a tab struck from its respective leg, said tab having a generally circular shape.

8. The multiple detent retaining clip of claim **7** wherein the outer gripping legs having integral feet comprising portions bent in said one direction whereby when it is desired to release said housing and clip from said inverted T-bar said legs may be spread apart to permit said detents to be moved over the enlarged head of the inverted T-bar.

9. A multiple detent retaining clip comprising:

a planar body portion adapted to be secured to a first object to be retained;

at least three substantially planar gripping legs extending in the same general direction from said planar body portion, at least two non-adjacent gripping legs being laterally offset from the plane of said body portion in one direction and at least one of said other gripping legs intermediate said at least two non-adjacent gripping legs being laterally offset in the other direction, each of said gripping legs having a detent projecting inwardly, whereby a second object may be easily slidably moved between said gripping legs in a direction toward said main body portion and is thereby retained by said detents against movement away from said main body portion, wherein said planar body portion and planar gripping legs are integral and fabricated from a single sheet of resilient metal; and

said two non-adjacent legs of the gripping legs each having a foot portion comprising an end portion of each leg bent in said one direction and wherein each of the associated detents are struck from its respective leg so that said detent is inclined inwardly and toward said body portion generally in the plane of and extending from the associated foot portion.

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