

Nov. 29, 1955

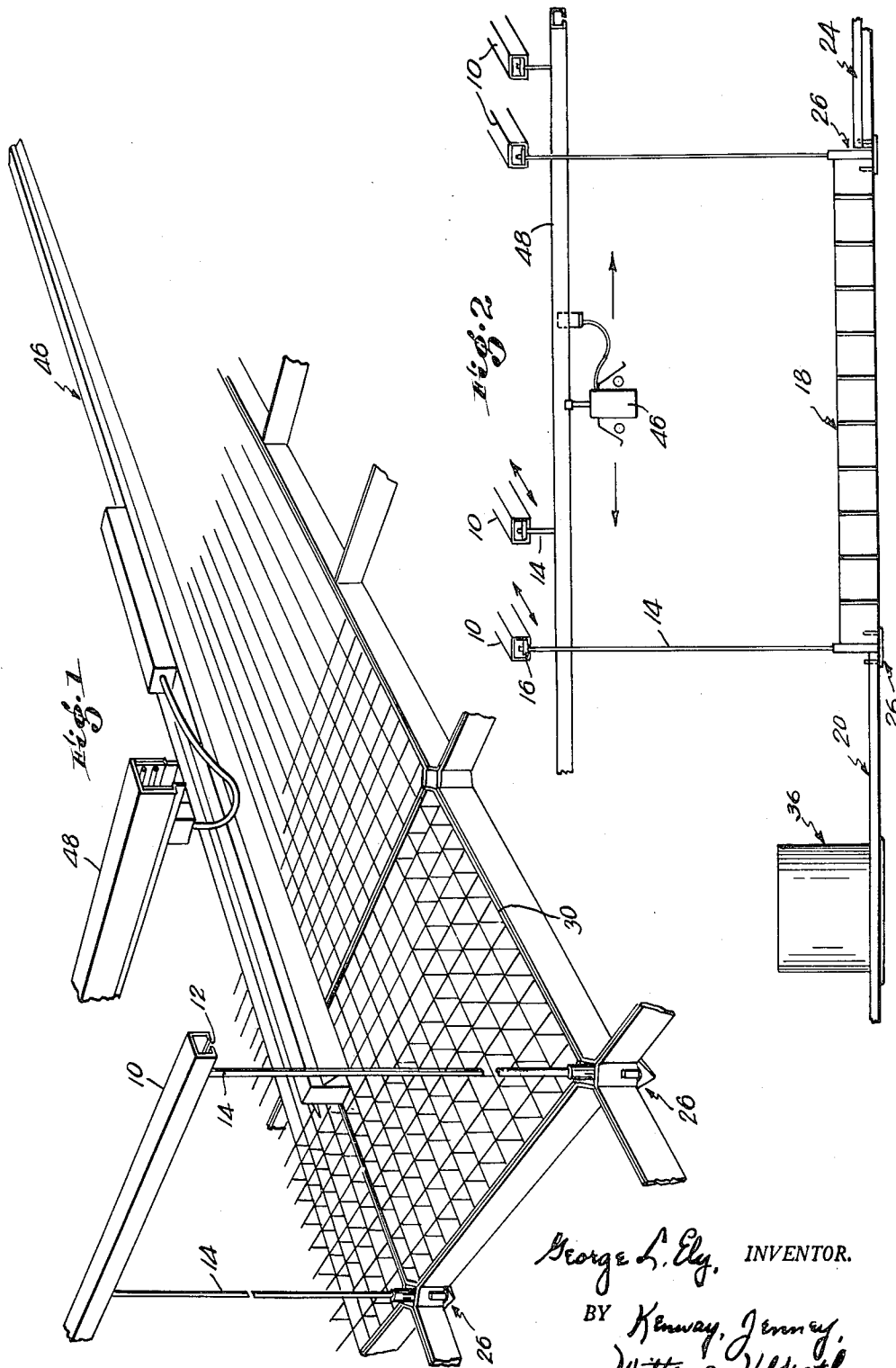
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2,725,126

CEILING COVERING AND APPARATUS FOR SUSPENDING SAME

Filed Feb. 15, 1949

3 Sheets-Sheet 1



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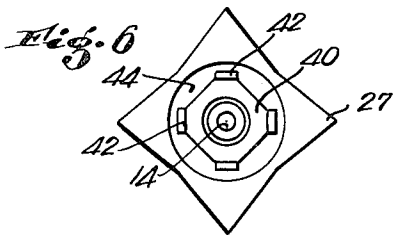
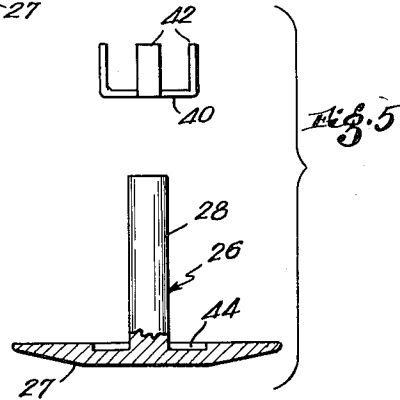
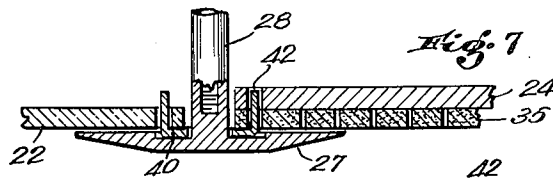
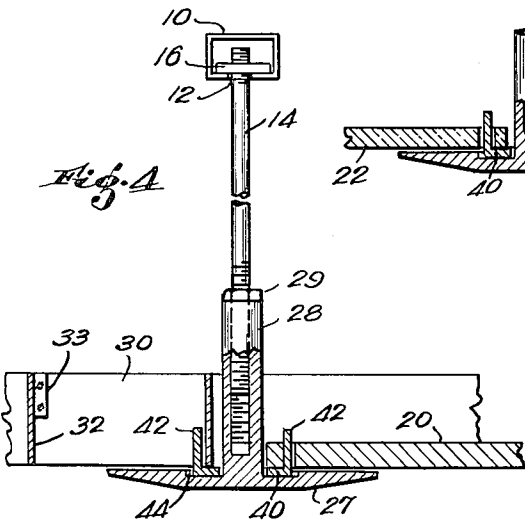
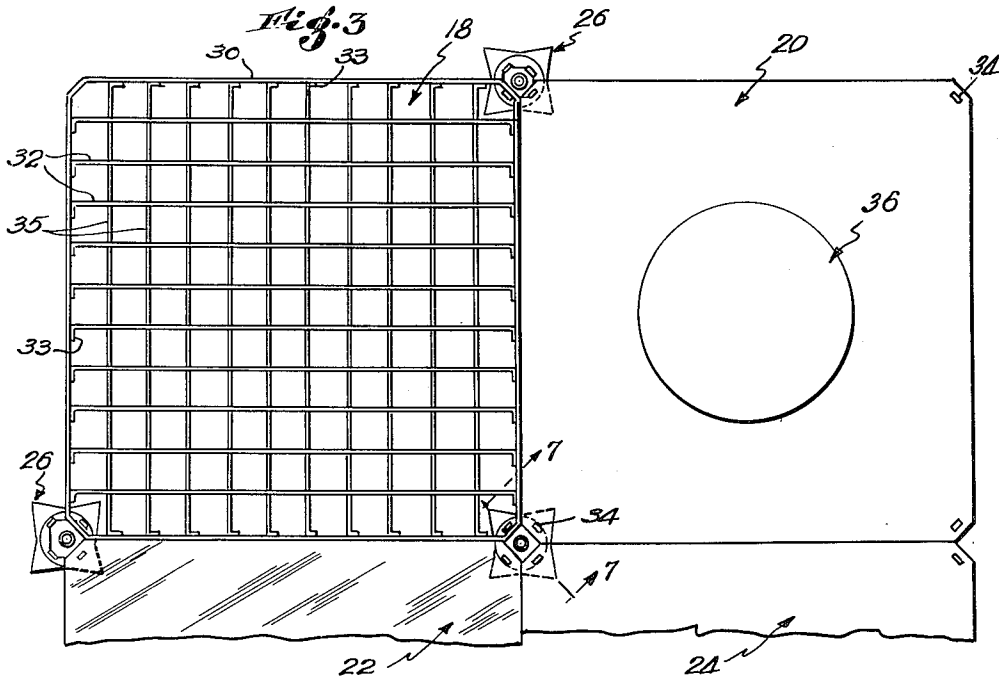
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CEILING COVERING AND APPARATUS FOR SUSPENDING SAME

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3 Sheets-Sheet 2



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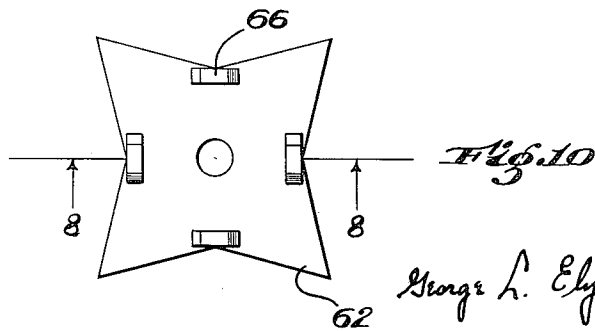
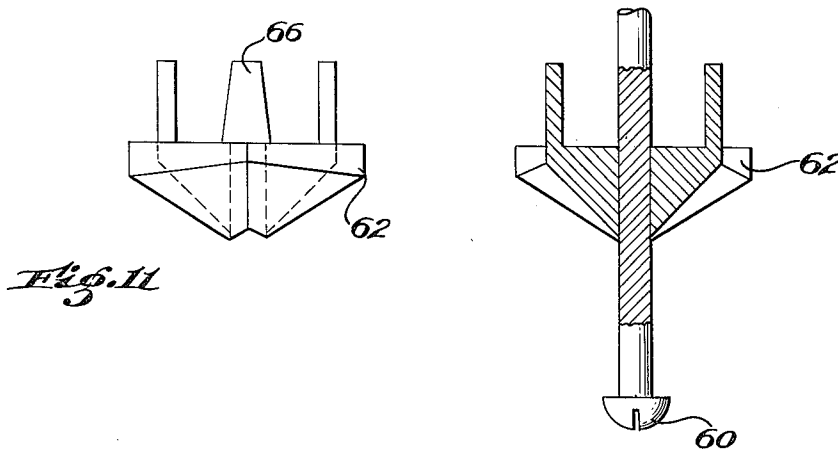
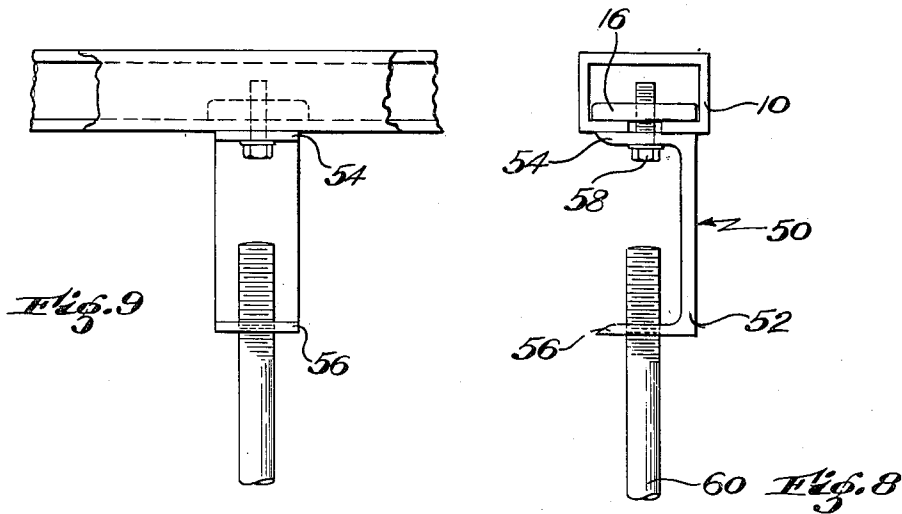
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CEILING COVERING AND APPARATUS FOR SUSPENDING SAME

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3 Sheets-Sheet 3



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2,725,126

**CEILING COVERING AND APPARATUS FOR
SUSPENDING SAME**

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Application February 15, 1949, Serial No. 76,496

3 Claims. (Cl. 189—88)

This invention relates to apparatus for covering ceilings, more particularly to a novel suspension means for ceiling panels by means of which the decorative effect of a ceiling may readily be changed and panels may conveniently be adjusted either vertically or horizontally.

Frequently in old buildings, the ceilings of the rooms are rendered extremely unsightly by the presence of numerous fixtures of various kinds, such as sprinkler pipes and air ducts; likewise in the case of newly constructed buildings, it is a major problem to devise means for concealing necessary piping fixtures, as well as air conditioning systems and the like. In the past one method has been to provide large between-spaces in the floors to accommodate such pipes. Another expedient has been to provide permanently installed panels arrayed below a conventional ceiling with the individual panels cemented together or otherwise permanently joined. Both of these methods have the disadvantages of being extremely costly and not at all adapted to adjustment once they have been installed. Furthermore, since the ceilings of many older buildings are rough and uneven the installation of such ceiling coverings entails costly architectural calculation and fabrication to attain an acceptable finished appearance.

Permanent ceilings have the further disadvantage of being poorly adapted to the accommodation of variable combinations of lighting fixtures or acoustic absorption members. Once they have been installed, it becomes a major operation to alter the lighting system to correspond with changes in the lighting requirements within the room. Furthermore the installation or removal of sound absorbing equipment generally entails a complete renovation of the ceiling. Another disadvantage experienced with conventional ceiling coverings is the maintenance problem. Due to the permanent nature of the panel suspension it is practically impossible to enter the space between conventional coverings and ceilings for repairs or cleaning.

Therefore it is an object of my invention to provide a ceiling covering of attractive appearance which may not only be useful in covering the unsightly pipes, ducts and fixtures of conventional ceilings but also be readily adaptable for adjustment or alteration.

It is a further object of my invention to provide a ceiling covering fully capable of providing passage for ducts, pipes, fixtures and the like so that the floors of newly constructed buildings may be constructed as simple weight-supporting members without regard to the provision of space for ducts, wires, pipes, or the like.

An additional object of my invention is to provide means for suspending panels from a conventional ceiling which will be readily adjustable horizontally and vertically and also permit ready interchange of the said panels.

In the accomplishment of these objects, I employ, in a preferred embodiment of my invention, symmetrically matched ceiling panels and suspend them from the conventional ceiling joists by depending hangers. The panels

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align adjacent to each other to form a continuous ceiling covering but have clipped or indented corners providing small openings through which the hangers pass.

It is a feature of my invention that the hangers support the weight of the panels from below without being rigidly secured to the panels. This is done by means of a support ring which extends laterally from the hangers under the adjacent corners of the panels. Thus, the panels may readily be removed by simply lifting the panels off the support rings, tilting the panels and lowering them through the panel space.

It is an additional feature of my invention that the panels are held firmly against lateral relative motion by upstanding lugs on the retaining rings. The lugs fit into appropriately located apertures in the panels adjacent to the panel corners, and hold the panels together. However, the lugs do not prevent independent panels from being lifted for removal or change.

It is an additional feature of my invention that the hangers are slidably connected to the ceiling joists by means of channel guide bars for horizontal adjustment.

Still another feature of my invention lies in the provision of a threaded member connecting the lower part of the hanger to the upper part of the hanger for vertical adjustment. The said lower part of the hanger extends below the panel support ring and is provided with a laterally extending flange or shoulder upon which the support ring rests. The ring, however, is independent from the hanger which may be rotated from below to raise or lower the panel corners, without disruption of the panels.

Further objects and features of my invention will best be understood and appreciated from a detailed description of preferred embodiments thereof, selected for the purposes of illustration, and shown in the accompanying drawings in which:

Fig. 1 is a view in perspective, from above, of the paneled ceiling covering of my invention,

Fig. 2 is a view in side elevation of the panels, the hangers, and lighting fixtures used in conjunction therewith,

Fig. 3 is a plan view of ceiling panels used in conjunction with the hangers of my invention,

Fig. 4 is a sectional view in side elevation of the hangers of my invention illustrating its adjustable feature,

Fig. 5 is an exploded view in side elevation of the bracket and support ring of my invention,

Fig. 6 is a plan view of the members shown in Fig. 5,

Fig. 7 is a sectional view in side elevation along the lines 7—7 of Fig. 3,

Fig. 8 is a view in end elevation of another embodiment of the hanger of my invention,

Fig. 9 is a view in side elevation of the upper end of the hanger shown in Fig. 8,

Fig. 10 is a plan view of the panel support ring shown in Fig. 8, and

Fig. 11 is a sectional view in side elevation along the lines 11—11 of Fig. 10.

In a preferred embodiment of my invention I employ channeled guide bars 10 secured to the joists or structural members of a conventional ceiling (not shown). The guides 10 are preferably of tubular metal construction having in their bottom a longitudinal channel opening 12. Suspended by the guides 10 are a plurality of hangers including pendants or rods 14 and flanged brackets 26. The rods 14 are threaded at their upper ends to receive flanged nuts 16 which serve to retain the pendants 14 within the guides 10. The flanged nuts 16 extend laterally across the openings 12 of the guides 10 and when secured to the upper ends of the rods 14 prevent the rods 14 from dropping out of the guides 10, but at the same time permit horizontal movement of the rods 14 along the longitudinal axis of the guides 10.

The lower ends of the rods 14 are threaded and connect to appropriately tapped upstanding shanks 28 of the brackets 26. The brackets 26 protrude below the ceiling panels and are provided with a laterally extending flange 27 which serves to support panel support rings 40 as will be described below. The brackets 26 may be adjusted vertically by simply turning them from below, and may be locked in position of adjustment by lock nuts 29 on the rods 14 bearing against the upstanding shanks 28.

Various types of ceiling panels may be employed and are indicated generally in Fig. 3 at 18, 20, 22 and 24. The panel 18 represents what is generally known in the trade as a louvre panel, consisting in a continuous rectangular peripheral frame member 30 constructed of sheet metal and disposed on edge. Secured to the frame 30 is a series of sheet metal strips or lattices 32 similar to the side frame 30 but notched at intervals to receive similar strips 35 laid at right angles to the strips 32 to form a cross lattice. Each of the lattices 32 and 35 are provided with short flanges 33 bent at right angles to the lattices and spot welded to the frame 30 for the purposes of supporting the said lattices 32 and 35 within the frame 30. The panels 18 are provided with oblique corners for the purpose of accommodating the hangers and retaining rings 40 as will be further described below.

The panel 20 is of rectangular shape with similar dimensions to the panel 18 and may be constructed of plywood or other suitably obdurate and opaque substance. Each of the corners of the said panel 20 is obliquely clipped and further provided with a small perforation 34. The panel 20 may be used to support a centrally mounted luminaire indicated generally at 36 of conventional construction providing a spotlight or screened lighting as desired.

The panel 22 is of similar construction to the panel 20, including perforations 34, but may preferably be made of a translucent material, such as Lucite and colored with various shades and hues as desired.

The panel 24 is opaque and of similar construction and shape to the panel 20, including perforations 34, and may preferably mount upon its under surface a sound absorbing member 35.

It will be evident from the structure thus described that the panels 18, 20, 22 and 24 when placed end to end and side to side will leave a small rectangular opening 38 between their adjacent corners and that the shank 28 of the bracket 26 extends upward through this opening. For the purposes of supporting the corners of the said panels, and of preventing random lateral movement of the same, I provide a support ring 40 having upstanding lugs 42. The support ring 40 is independent from the bracket 26 but fits around the shank 28 of the bracket 26 and rests upon the flange 27. The upstanding lugs 42 of the retaining ring 40 fit into the notches 34 of the panels 20, 22 and 24, and fit inside of the corners of the frame 30 of the louvre-type panel 18. The flange 27 of the bracket 26 may be formed in the shape of a roughly rectangular, four cornered star, extending laterally under the corners of the panels. The upper surface of the flange 27 is provided with a shallow recess 44 for the purpose of receiving the retaining ring 40 and to allow the outer ends of the flange 30 to set upwardly adjacent to the under surface of the panels.

Another hanger for the ceiling covering of my invention is illustrated in Figs. 8, 9, 10 and 11 and includes a double angle link 50, a depending rod 60 and a panel support ring 62. The link 50 is made of metal plate and is bent to form a vertical side wall 52, an upper horizontal flange 54 and a lower horizontal flange 56. The upper flange 54 of the link 50 is perforated to receive a bolt 58 which connects to the flanged nut 16 in the guide bar 10 and rigidly secures the link 50 to the said guide bar. A threaded connection is provided between the upper end of the rod 60 and the lower flange 56 of the link 50 with the said rod and flange being appropriately threaded and tapped. At its lower end, the rod 60 is provided with a

screw head 64 for the purpose of suspending the support ring 62 and for rotating the rod 60 for vertical adjustment.

The support ring 62 fits around the rod 60 and rests upon the laterally extending shoulder of the screw head 64. The support ring 62 is similar to the support ring 40 in its function of supporting the panels, and it is likewise provided with upstanding lugs 66 which correspond to the lugs 42 of the ring 40. However, since the screw head 58 is relatively small and the under surface of the support ring 62 will be exposed to view beneath the ceiling panels, the support ring 62 is formed in the shape of a four cornered star as illustrated in Fig. 10 for decorative purposes.

It will be seen that the hanger illustrated in Figs. 8, 9, 10 and 11 may conveniently be adjusted vertically by turning the rod 60 with a screw driver below the panels.

The installation of the ceiling covering of my invention will be evident from the apparatus thus described. The guide bars 10 are first installed in appropriate places to the ceiling joists. Then the hangers are connected to the guide bars 10, and adjusted horizontally to conform to the dimensions of the panels. When a number of the hangers have been thus installed, the panels are then individually elevated to a position above the support rings 40 (or 62 as appropriate) and lowered down upon the said support rings with the lugs 42 (or 66 as appropriate) fitting into the perforations 34 in the panels. In the case of louvre type panels 18, of course, the upstanding lugs will enter the corner openings of the panels. In this position the panels will merely rest upon the support rings from which they may readily be removed, but they will be held against random relative lateral motion by the said upstanding lugs 42 or 66. Furthermore, the panels may readily be adjusted vertically by simply rotating the brackets 26 or the rods 60. With such an arrangement a panel ceiling covering may be installed and adjusted to provide a perfectly even ceiling without the necessity of costly architectural calculations and fabrication regardless of the roughness of the supporting ceiling.

When a ceiling covering comprising louvre panels 18 is supported by either of the above described hangers, lighting fixtures 46, of the fluorescent or incandescent type may be mounted upon traveling ducts of conventional structure indicated generally at 48, thus providing a source of light and allowing ready positioning of such lights to meet varying lighting requirements within the room.

It will be evident from the description of this preferred embodiment of my invention that it provides a convenient and variable paneled ceiling arrangement. The floors of a building equipped with this device need not be constructed with large between-spaces but can be designed purely from the standpoint of support. Air conditioning ducts or other installation pipes may be conveniently hidden by the panels so supported.

The panels of my invention can be readily removed for maintenance purposes or cleaning, and in particular they may be readily interchangeable with other types of panels to meet the dictates of fashion or changes in lighting requirements.

Certain minor variations will be apparent to those skilled in the art. For instance, the flanges 27 of the brackets 26 need not be in the shape of four cornered stars, the panels need not be rectangular, and the corners of the panels need not be obliquely clipped. Furthermore, the panels need not be adjacent along all sides, but may readily abut corner to corner or be suspended alone. Therefore, it is not intended to confine the invention to the precise limits of the preferred embodiment herein shown, but rather to measure it in terms of the appended claims.

Having thus described and disclosed an illustrative embodiment of my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A ceiling covering having in combination panels

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with clipped corners, the said panels being in abutting relation end to end and side to side whereby their clipped corners form openings between the adjacent corners; walls defining small apertures adjacent each corner of said panels; vertically adjustable hangers connected to the ceiling and protruding below the panels through the said openings including two members joined by a threaded connection, whereby the hanger may be adjusted vertically by rotation of the end of the hanger which protrudes below the panels; and means including a ring resting upon the hanger, independent therefrom, and having upstanding lugs fitting into said small apertures, supporting the corners of the said panels and retaining them against relative horizontal movement.

2. A covering for ceilings having in combination symmetrically matched panels with clipped corners, the said panels being arrayed end to end and side by side and forming a continuous ceiling covering having small openings where the said clipped corners lie adjacent to each other; walls forming small apertures adjacent the said clipped corners of said panels; means suspending the said panels from the ceiling comprising guide ways secured to the ceiling, depending rods the upper ends of which are slidably mounted in the said guide ways, support brackets adjustably connected to the lower ends of the said depending rods through the openings between the corners of the panels, and means including a ring independent from the said support brackets resting on said support brackets and having upstanding lugs fitting into the said small apertures supporting the adjacent corners of the panels and

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connecting them together whereby the suspension means may be adjusted vertically without disruption of the panels.

3. A covering for ceilings having in combination symmetrically matched panels with clipped corners and small apertures adjacent to the said clipped corners, the said panels being arranged end to end and side by side and forming a continuous ceiling covering having small open spaces where the said clipped corners lie adjacent to each other; means suspending the said panels from the ceiling comprising depending rods connected to the ceiling, support members adjustably connected to the lower ends of the said depending rods through the openings between the corners of the panels, and a retaining ring independent from the said support members having upstanding lugs thereon fitting into the said small apertures in the corners of the panels and connecting the adjacent corners of the panels together whereby the suspension means may be adjusted vertically without disruption of the panels, and the panels may be independently removed by lifting them so as to clear the said upstanding lugs, tilting them, and lowering them through the panel space.

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