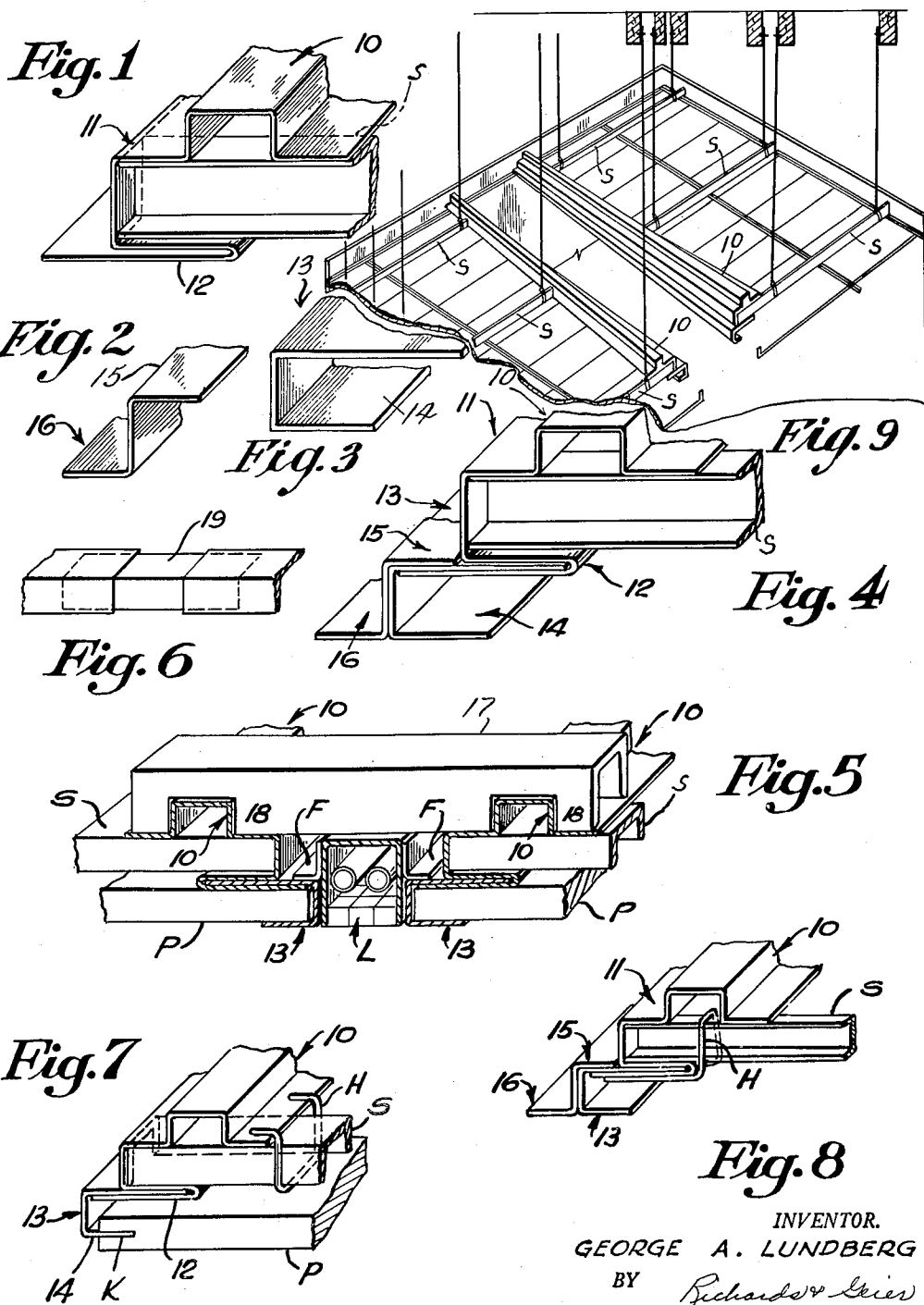


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CEILING CONSTRUCTION

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## CEILING CONSTRUCTION

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3 Claims. (Cl. 189—85)

This invention relates to a novel supporting structure, more particularly a supporting structure for the components such as panel and lighting fixture elements employed in the formation of ceilings.

Contemporary building methods employ for both esthetic and practical reasons, so called hung or dropped ceiling arrangements which serve the dual purpose of providing insulating space against heat and sound between successive floors, and hiding the structural elements such as pipes, beams, wires and the like which it is generally desired to conceal. In the formation of these ceilings, panel elements are employed suspended from appropriately formed channel sections mounted below the ceiling slab. Lighting fixtures, anemostats, heating panels and any other customary ceiling components are similarly suspended. Generally the component elements are, however, permanently secured in place and a variety of difficulties arise in the repair and maintenance of the ceiling. Thus in the oft encountered situations where it is desired to remodel or repartition floor areas, as needs change whether in offices, commercial or industrial establishments, or in the home, it becomes necessary to reposition the lighting fixtures, anemostats, and any of the other ceiling fixtures whose position with respect to the floor area determines their function. Such repositioning generally requires a cutting and breaking through of existing ceiling structures with the resultant expenditure of time and cost and an inconvenience of occupants. Further difficulties are engendered in the use of conventional hung ceilings in that the aforementioned spacing clearly serves to decrease the available cubic volume of any building structure.

It is with the above problems in mind that the present construction has been evolved, a construction providing means for enhancing the flexibility of position of the normally employed ceiling components whereby any desired changes in position of these components may readily be accomplished. The invention further is such as to implement the construction of any type of ceiling made up of panel elements.

It is accordingly a primary object of this invention to provide an improved ceiling construction.

Another object of this invention is to implement modernization of existing structures by providing means for facilitating the installation of modern lighting, ventilating and heating fixtures in the ceiling.

A further object of this invention is to provide a multi-level ceiling construction providing the benefits of hung ceilings and eliminating the space wasting results thereof.

It is also an object of this invention to provide a ceiling construction, the component units of which may readily be repositioned or changed as desired.

A still further object of this invention is to facilitate the rearrangement of ceiling components to enhance their functionality in the event of changes in floor plan.

An additional object of this invention is to provide means permitting access to the structural elements hidden by hung ceilings, without damaging said ceilings.

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Another object is to simplify and enhance esthetically and functionally the construction of ceilings.

These and other objects of the invention which will become apparent from the following disclosure and claims are achieved by provision of a novel carrier piece having at least one uninterrupted channel groove extending the length thereof. A plurality of these carrier pieces, in the shape of channels with flanges facing each other are supported from the main supports of the ceiling, at spaced intervals. In the formation of the ceiling any component units are movably supported by the channel grooves of the novel carrier which may be modified by the removable positioning of additional channel flange portions in conjunction with said carrier. The carrier may be provided to form a ceiling of varying height so that where flanges are removably positioned on the carrier channel at different levels, panels supported on these flanges will assume different levels and thus permit a flexibility of ceiling construction to removably accommodate any desired ceiling fixture.

The specific constructional feature of a preferred embodiment of the novel ceiling will be made most manifest and particularly pointed out hereinafter in conjunction with the drawings, wherein:

Figure 1 represents a perspective partial view of one form of ceiling construction employing the herein disclosed novel carrier construction.

Figure 2 is a fragmentary perspective view of an auxiliary flange piece designed for use with the carrier of Figure 1.

Figure 3 is a perspective view of another type of auxiliary flange member designed for use in conjunction with the carrier of Figure 1.

Figure 4 illustrates the carrier of Figure 1 provided with the flange elements of the type shown in Figures 2 and 3.

Figure 5 is a perspective view with parts broken away illustrating a hung ceiling constructed in accordance with the principles of this invention.

Figure 6 is a perspective view of a connecting member used for joining diverse carrier channel sections.

Figure 7 is a perspective partial view of a ceiling construction employing kerfed panel sections.

Figure 8 illustrates a preferred mode of attachment of the carriers to the main ceiling supports.

Figure 9 is a perspective view of a ceiling construction showing the hung main ceiling supports and the carrier channels.

Referring now more particularly to the drawings, like numerals in the various figures are taken to designate like parts. Figure 1 illustrates a carrier channel 10 having a portion constituting an inverted vertical U-shaped channel and flange portions 11 and 12 formed integrally therewith. An auxiliary flange plate 13 of the rectilinear cross section illustrated in Figure 3, is positioned in the carrier channel's U groove created by flange 12 as seen in Figure 4. This flange plate 13 has an inturned flange 14. In the embodiment illustrated in Figure 1 the carrier 10 is shown as supported by any suitable coupling means on a main ceiling support S.

Auxiliary flange 15 of the Z type shown in Figure 2 or the U type flange 13 shown in Figure 3 may be positioned in the carrier as seen in Figure 4.

Figure 5 illustrates a typical mode of hung ceiling construction employing the novel carrier element of the type here disclosed. Carrier channels 10 shown in Figure 5 are seen to be supported on main ceiling support S at spaced intervals. It will be observed that the arrangement here illustrated provides for a break in main ceiling support. The main ceiling supports S are generally hung by straps or wires in a known manner from the floor slab or exposed floor beam to the desired hung

ceiling height. It will become apparent that the ends of a plurality of spaced ceiling supports S will carry a selectable length of the carrier channel 10. Flanges F of a light fixture L are seen to be supported on the upper portion of an auxiliary flange piece 13 of the type illustrated in Figure 3. The bottom of the light fixture L extends flush with the bottom of supporting flange 13 which in turn supports typical ceiling panels P. A bracing piece 17 having U-shaped grooves 18 is positioned over the upper portion of channels 10 to engage same and secure their spacing relative to main ceiling supports S.

Figure 6 illustrates a suggested connecting piece 19 for use in the joining of two carrier channel elements. The cross section of this connecting piece 19 is equivalent to that of the inside cross section of the carrier channel members joined and it will be observed that upon insertion in said channel members of said piece, the latter serves to securely maintain same in alignment without encroaching upon the exterior flange areas thereof.

Figure 7 illustrates a suggested mode for the support of splined panel sections. A carrier channel such for example as 10 illustrated in Figure 5 is arranged on main ceiling support S in the manner previously disclosed. The auxiliary flange member 13 engaged in U flange 12 of the carrier channel section 10 is arranged so that flange portion 14 of the auxiliary flange member 13 is splined into the kerf K of the panel P. A spring clip H may be employed to secure positioning of channel 10 on main ceiling support S as illustrated in Figure 8. Figure 9 illustrates a plurality of main ceiling supports S hung at the desired ceiling height to the exposed floor beam by means of a wire or strap. The carrier channel 10 is carried by the spaced ends of a plurality of main ceiling supports S.

#### Operation

In use the novel carrier construction here disclosed serves to slideably and movably retain the component ceiling elements by virtue of the fact that the ceiling elements whether panels, lighting fixtures, ventilating outlets, or the like are supported loosely on the flanges of the type above disclosed. The flange support provided is sufficient to maintain any ceiling components in position since it is only vertical support which is required.

It will thus be observed that a ceiling construction has been provided to implement and facilitate the construction of hung ceilings whereby supporting channels having flanges formed integrally therewith or auxiliary flange members are provided for the movable support of

the ceiling components whereby they may readily be installed, rearranged or moved for maintenance of the above-ceiling-structure.

The above disclosure has been given by way of illustration and elucidation and not by way of limitation and it is desired to protect all embodiments of the herein disclosed inventive concept within the scope of the appended claims.

What is claimed is:

1. In a ceiling construction, a plurality of ceiling supports, a carrier channel carried by the ends of said ceiling supports and having a portion constituting an inverted vertical U-shaped channel, a flange portion forming a horizontal U-groove, and a vertical portion interconnecting said portions, and an auxiliary flange plate extending into said U-groove and having an inturned flange extending under said U-groove and parallel thereto.

2. In a ceiling construction, a plurality of ceiling supports, a carrier channel carried by the ends of said ceiling supports and having a portion constituting an inverted vertical U-shaped channel, a flange portion forming a horizontal U-groove, and a vertical portion interconnecting said portions, an auxiliary flange plate extending into said U-groove and having an inturned flange extending under said U-groove and parallel thereto, and an auxiliary Z-type flange having a portion fitting over said auxiliary flange plate and another portion located in the same plane as the inturned flange of said auxiliary flange plate and extending in the opposite direction.

3. In a ceiling construction, a plurality of ceiling supports, a carrier channel carried by the ends of said ceiling supports and having a portion constituting an inverted vertical U-shaped channel, a flange portion forming a horizontal U-groove, and a vertical portion interconnecting said portions, an auxiliary flange plate extending into said U-groove and having an inturned flange extending under said U-groove and parallel thereto, and a spring clip enclosing one of said ceiling supports and having ends engaging the first-mentioned flange portion.

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