Nov. 4, 1969 R. H. JAHN 3,475,869

VENTILATED SUSPENDED CEILING STRUCTURE

Filed Sept. 7, 1966

Fig. 1

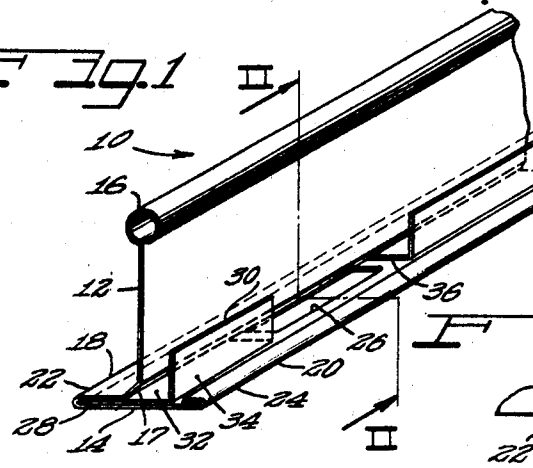


Fig. 2

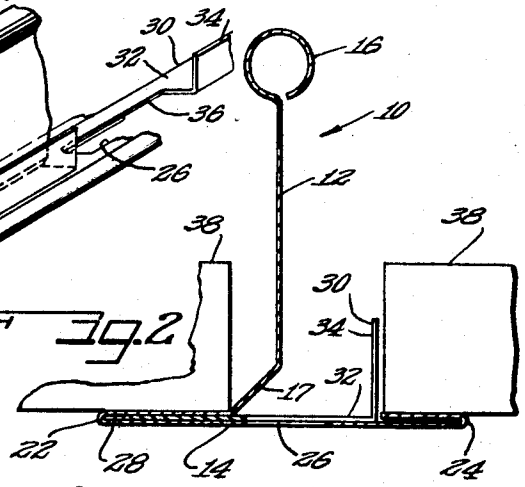


Fig. 4

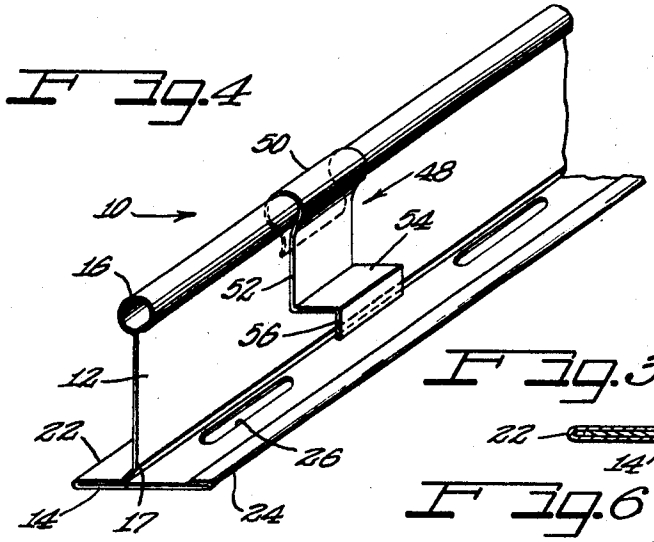


Fig. 3

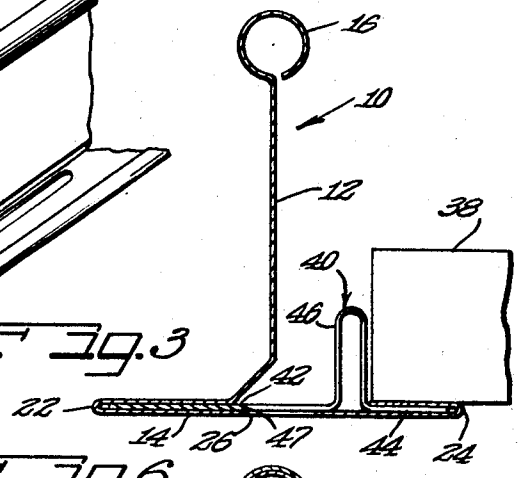


Fig. 6

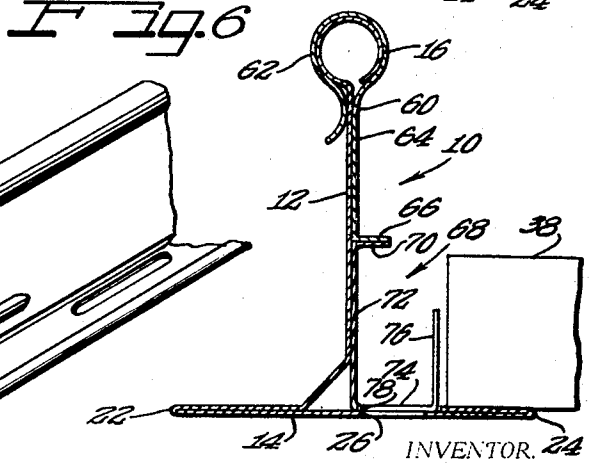
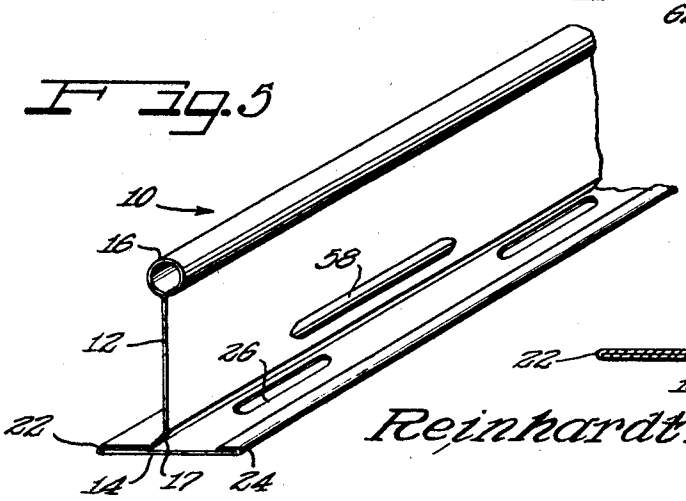


Fig. 5



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VENTILATED SUSPENDED CEILING STRUCTURE

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U.S. Cl. 52—173 5 Claims

ABSTRACT OF THE DISCLOSURE

A runner element for supporting ceiling panels having an elongated strip in which the strip has a stem portion for suspension and a folded edge portion with overlapping pieces forming a space therebetween so that a spacer with an extended portion for abutting an edge of a ceiling panel to position the edge a spaced distance from the aperture can be mounted slidably between the overlapping pieces on the elongated strip.

This invention relates generally to ceiling support arrangements having intersecting runner elements and more particularly to such runners have ventilating means for use in a ventilated suspended ceiling system.

In the past, suspended ceiling systems have been known wherein metal runners are suspended by wires or similar elements. A plurality of such supported runners interconnected with one another form a grid system for supporting ceiling panels or tiles. The main structural element used in forming such prior known suspended ceiling structure was an elongated metallic element having a vertically extended stem portion for attachment from above, and a laterally extending portion at the lower edge of the stem portion constructed to receive and support an edge portion of the ceiling panels. An edge of a pair of ceiling panels could thereby be supported by the laterally extending portion on opposite sides of the stem portion. In such an arrangement, each ceiling panel would abut against the vertically extended stem portion, thereby providing a tight fit between each panel and the stem portion.

Such a prior known arrangement would not permit air to circulate upwardly between the ceiling panels, due to the tight fitting relationship between the laterally extending portion and the edges of each of the panels.

An object of the present invention, therefore, is to provide a suspended ceiling grid system which is so designed that air may pass between adjacent ceiling panels for ventilation of the space thereabove.

Another object of the present invention is to provide a runner structure for use in grid systems supporting ceiling panels and the like, which is so designed that only one type of runner need be employed to facilitate the above-mentioned ventilation.

A further object of the invention resides in the provision of a novel runner for supporting ceiling panels, which permits ventilation of the space thereabove and which is of simple and efficient design.

A further object of the present invention resides in the

provision of a novel runner structure for mounting and supporting ceiling panels in an easy and simplified manner while maintaining communication of air from below the suspended ceiling structure to the area above the ceiling structure.

These and other objects, features and advantages of the present invention will become more apparent to those skilled in the art from the following detailed description when taken in conjunction with the accompanying drawing, wherein:

FIGURE 1 is a perspective view of an end portion of a runner for supporting ceiling panels which is constructed in accordance with the principles of the present invention;

FIGURE 2 is a sectional view of the runner illustrated in FIGURE 1 taken approximately on the line II—II of FIGURE 1;

FIGURE 3 is a sectional view, similar to FIGURE 2, of a modified form of the runner structure;

FIGURE 4 is a perspective view of another embodiment of the invention;

FIGURE 5 is a perspective view of still another embodiment of the present invention; and

FIGURE 6 is a sectional view, similar to FIGURES 2 and 3, of a further embodiment of the present invention.

Like reference numerals throughout the various views of the drawing are intended to designate the same or similar structures.

With reference to the drawing in detail, each of the figures illustrates a main runner element, generally designated with the reference numeral **10**, which is illustrated without the structure required for interconnection with another runner element for purposes of clarity. The main runner element **10** is generally formed by a vertical stem portion **12**, a lateral portion **14**, and a bead **16**. The main runner element **10** is illustrated as being formed from a single piece of sheet material which is rolled at one edge of the stem portion **12** to form the bead **16** and folded at the other edge of the stem portion **12** to form the lateral portion **14**. As illustrated, the stem portion **12** may be joined to the lateral portion **14** by means of an offset **17**. The lateral portion **14**, which is formed as an extension of the lower edge of the stem portion **12**, is folded along a pair of lines, indicated with the reference numerals **18** and **20**, to form reinforced edges **22** and **24** respectively. In order to provide ventilation from below the lateral portion **14** to an area above the lateral portion **14**, a plurality of apertures **26** are provided therein.

In the embodiment illustrated in FIGURES 1 and 2, a space **28** is formed in the lateral portion between the two overlapping pieces of sheet material forming the reinforced edge **22**. A spacer **30** is generally formed by a lateral portion **32** and a vertical portion **34**. The lateral portion **32** of the spacer **30** is inserted into the space **28** of the lateral portion **14** and is slidable therealong. The spacer **30** is provided with a plurality of notches **36** which cooperate with the apertures **26** to provide regulated control of the amount of air passing through the apertures **26**. That is, the spacer **30**, being slidable along the main runner element **10** can be positioned as illustrated in

FIGURE 1 or can be positioned to close the apertures **26** and prevent the passage of air therethrough.

As more clearly illustrated in FIGURE 2, the lateral portion **14** provides support for ceiling panels, generally designated with the reference numeral **38**. The spacer **30** maintains an edge of a respective ceiling panel **38** at a spaced distance from the stem portion **12** and the apertures **26** to permit the passage of air through the main runner element. The portion **17** maintains the other ceiling panel a spaced distance from the stem portion **12** to provide a balanced condition of the main runner element **10** when it is supported by the bead **16**. That is, the portion **17** and the spacer **30** are so dimensioned so that the stem portion **12** is approximately midway between the edges of the two ceiling panels **38** supported on the lateral portion **14**.

The embodiment illustrated in FIGURE 3 is very similar to that illustrated in FIGURE 1. As shown therein, a spacer **40** includes a pair of lateral portions **42** and **44** joined together by a vertical, U-shaped member **46**. A notch **47**, similar to the notch **36** illustrated in FIGURE 1, is provided in the spacer **40** and cooperates with the aperture **26** to allow ventilation through the runner element **10** and between adjacent edges of the ceiling panels **38**. As shown in FIGURE 3, the lateral portions **42** of the spacer **40** is supported between the two overlying portions of the lateral portion **14** forming the reinforced edge **22** and the lateral portion **44** of the spacer **40** is supported between the two overlying portions of the lateral portion **14** forming the reinforced edge **24** thereof. The spacer **40** may also be slidable with respect to the runner element **10** to provide regulation of the amount of air flow through the apertures **26**.

The embodiment illustrated in FIGURE 4 includes a spacer **48** generally formed by a clip portion **50** resiliently engaging the bead **16** of the runner **10**, a vertical portion **52** extending along and abutting with the stem portion **12**, a lateral portion **54**, and a vertical portion **56** supported on the lateral portion **54**. An edge of a ceiling panel **38** or the like will abut against the vertical portion **56**. In this manner, an edge of a ceiling panel **38** will be spaced from the stem portion to permit the passage of air through the apertures **26** and upwardly past the edges of the ceiling panels **38** supported on the reinforced edge **24**.

FIGURE 5 illustrates still another embodiment of the present invention for spacing the edges of ceiling panels **38** from the stem portion **12** of the main runner element **10**. As shown therein, the stem portion **12** is deformed to provide convex portions **58** which are disposed for being engaged by an edge of a ceiling panel **38** or the like. The convex portion **58** supports an edge of the ceiling panel **38** a spaced distance from the stem portion **12** to allow the passage of air through the apertures **26** and pass to the edge portions of the ceiling panels **38**. As shown in FIGURE 5, the convex portion **58** is preferably positioned midway between a pair of adjacent apertures **26** to further enhance the passage of air through the main runner element **10** and pass the edges of the ceiling panels **38** supported thereon.

FIGURE 6 illustrates still another embodiment of the present invention and generally includes a retainer **60** formed by a clip portion **62** surrounding the bead **16**, a vertical portion **64** supported adjacent the vertical portion **12** and a lateral portion **66** extending from a lower edge of the vertical portion **64**. A spacer **68** is formed of a lateral portion **70**, a vertical portion **72**, a lateral portion **74**, and a vertical portion **76** joined together at their edges. The lateral portion **66** of the retainer **60** abuts with the lateral portion **70** of the spacer **68** to maintain the spacer **68** in the position illustrated in FIGURE 6. The spacer **68** includes a plurality of apertures **78** which cooperate with the apertures **26** to provide regulated control of the ventilation through the main runner element **10**. The vertical portion **76** of the spacer **68** supports an edge of the ceiling panel **38** a fixed distance from the stem portion **12** to further facilitate the passage of air through the runner element **10** and past the edge of the ceiling panel **38**.

In each of the embodiments illustrated in FIGURES 1–6, it is apparent that the desired ventilation may be achieved by controlling the amount of air passing through the aperture **26**. This control of the amount of air passage is accomplished by positioning the spacers with respect to the runner element to open or close the apertures **26**. Furthermore, the stem portion **12** is provided at its lower edge with the portion **17** for spacing adjacent edges of ceiling panels **38** in equal distance therefrom to maintain the stem portion **12** in a substantially vertical line when tiles are supported on the lateral portions **14**.

Although various minor modifications might be suggested by those versed in the art, it should be understood that I wish to embody within the scope of the patent warranted hereon all such embodiments as reasonably and properly come within the scope of my contribution to the art.

The invention claimed is:

1. A runner element for supporting ceiling panels comprising:

an elongated member having a vertically extending stem portion and a laterally extending portion,

a folded-over portion of said runner defining the said laterally extending portion on one side of said stem, there being a space formed between the folded-over portions of the runner,

an aperture formed within said laterally extending portion spaced outwardly from the folded-over portion thereof and inwardly of the margin thereof, and

a spacer element having a leg carried within the space formed intermediate the folded-over portions of said runner element and having an upstanding portion adapted to abut an edge of a ceiling panel to retain said ceiling panel in spaced relation from said aperture.

2. The runner element as set forth in claim **1** wherein said spacer element is slidably carried between said folded-over portions and its said leg is positionable over said aperture to control the effective airflow area of the said aperture.

3. A runner element for supporting ceiling panels comprising:

an elongated strip having a stem portion and a lateral portion forming a T-bar,

said lateral portion having overlapping pieces forming a space therebetween and an aperture in the lowermost piece,

a spacer member mounted on said elongated strip and including a lateral portion and an extended portion,

the lateral portion of the spacer member slidably supported between said overlapping piece and cooperable with said aperture for regulating the opening thereof, and

said extended portion being spaced inwardly of the outer edge of the lateral portion of said T-bar.

4. A runner element as defined in claim **3** wherein said lateral portion includes means for slidably supporting opposite edges of said spacer, wherein said extended portion is formed between the opposite edges of said spacer, and wherein said regulating means includes an aperture in said spacer cooperable with said aperture in said strip.

5. A runner element for supporting ceiling panels comprising:

an elongated strip, said elongated strip having a stem portion and a lateral portion forming a T-bar, said lateral portion having an aperture therein,

said elongated strip having a bead supported on an upper edge of said stem portion, and further including a retainer releasably attached to said bead and having a surface extending orthogonally from said

stem portion, and spaced from the lateral portion of said elongated strip,

a spacer,

said spacer having a number of lateral sections,

one of said sections abutting said orthogonal surface, and another section abutting said lateral portion of said elongated strip,

said other section having an opening, said spacer being shiftable along the elongated strip for aligning the opening in the spacer with the aperture in the elongated strip, said other section terminating in an upstanding portion spaced from the stem portion of said elongated strip for spacing a ceiling panel away from said aligned aperture and opening.

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KENNETH DOWNEY, Primary Examiner

U.S. Cl. X.R.

52—303, 484, 732; 98—40