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GRID FOR SUSPENDED TILE CEILINGS AND SUSPENSION MEANS THEREFOR

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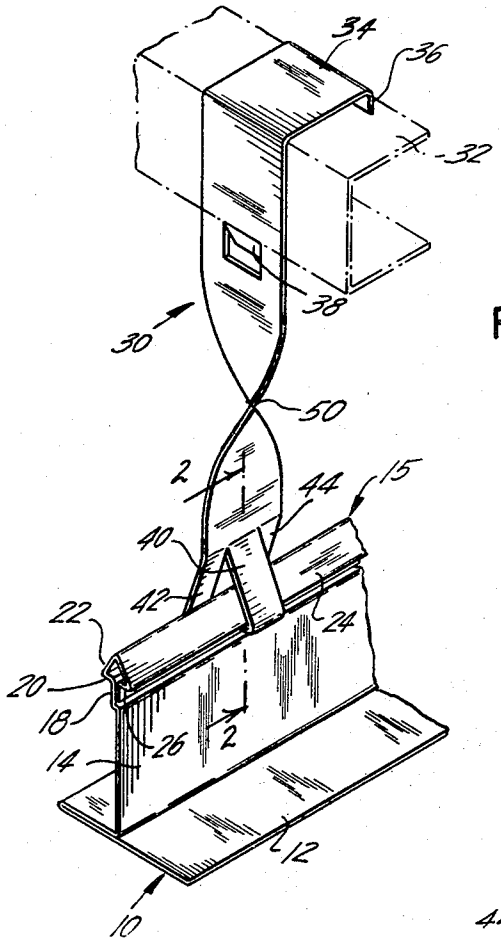


FIG. 1

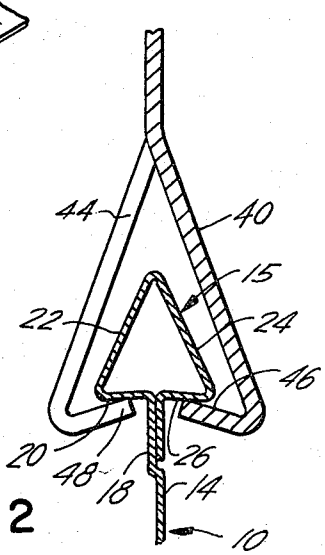


FIG. 2

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GRID FOR SUSPENDED TILE CEILINGS AND SUSPENSION MEANS THEREFOR

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ABSTRACT OF THE DISCLOSURE

In a grid for a suspended tile ceiling, the combination of a tile-supporting runner including an upright section having a suspender-engaging bead of substantially triangular cross-section on its edge, with its apex at the top, and having a bottom wall which is inwardly indented, and a suspension element comprising a metal strip, twisted at its center to dispose its end portions at right angles to one another, one end portion having a hook for suspending the element; the other end portion slitted to provide at least two sections which are divergently spread with their ends inwardly offset and their edges spaced a distance less than the width of the base of the bead and adapted to have the bead snap-fitted on the element between them.

The present invention relates to suspended tile ceilings, such as acoustical or like tile ceilings, and more particularly to the structural elements for supporting the tiles in suspended relation to the true ceiling of a structure.

Suspended tile ceilings, of the character to which the present inventon relates, generally consist of a tile-supporting grid formed of spaced, parallel elongated main runners of inverted T-shape and of spaced, parallel, likewise inverted, T-shaped transverse elements connected between each of two adjacent main runners; the flanges of the main and connecting runners serving to support the tiles. Such grids have been suspended from the true ceiling of structures in various, relatively complex, time-consuming ways which required special fabrication of the grid elements, or the use of clips for securing the runners to the ceiling or to the furring secured to the true ceiling. All methods heretofore used for suspending the grid from the true ceiling had in common that they required the use of tools, which is a laborious and time-consuming procedure, especially when performed at the top of a ladder or scaffolding, and added greatly to the cost of such suspended tile ceilings.

It is, therefore, a primary object of the present invention to provide runners for the tile-supporting grid of suspended tile ceilings and suspension elements for such runners which may be easily and rapidly assembled with one another without the use of any connecting elements and without the use of any tools.

It is another object of the present invention to provide grid-forming runner and suspension elements therefor which, when assembled, will safely and securely remain in assembled relation and safely and securely support the ceiling-forming tiles.

It is also an object of the present invention to provide the structural elements for the tile-supporting grid of a suspended tile ceiling, of the character described, which are sturdy and rigid and will not bend or sag or otherwise become distorted.

It is a further object of the present invention to provide structural elements for forming a tile-supporting grid for suspended tile ceilings, of the character described, which will provide substantial economies in time, labor, and cost of building such ceilings.

The foregoing and other objects and advantages of the structural grid elements for suspended tile ceilings, of

the present invention, will become more readily apparent to those skilled in the art from the embodiments thereof shown in the accompanying drawing, and from the description following. It is to be understood, however, that such embodiments are shown by way of illustration only, to make the principles and practice of the invention more readily comprehensible, and without any intent of limiting the invention to the specific details therein shown.

In the drawings:

FIG. 1 is a fragmentary, isometric view of a grid-forming runner and suspension element therefor, of the present invention, shown as suspended from a furring beam; the latter shown in broken lines; and

FIG. 2 is a fragmentary, sectional view, on an enlarged scale, taken on line 2—2 of FIG. 1.

Generally stated, the present invention resides in the provision of grid runners and runner-suspension hooks or elements which may be assembled with one another by a snap-fit and safely and securely maintained in such assembly.

More specifically stated, and with reference to the accompanying drawing, the runner of the invention, generally designated as **10**, is preferably of unitary construction; formed of a strip of sheet metal, preferably coated, as with enamel or zinc, which is fabricated and bent into T-shape to provide a cross-piece section, **12**, and then re-entrantly bent half-way of the width of the cross-piece **12**, and then bent again to normal relation to the cross-piece **12** to form the upright web, **14**.

The outer end portion of the web **14** may be slightly, laterally offset relative to the inner portion thereof, as at **18**, a distance preferably not greater than the thickness of the sheet metal material. A stiffening bead, generally designated as **15**, of substantially triangular cross-section, which may also serve as a suspension means for the runner **10**, may be formed at the outer end of the web section **14** by offsetting the integral extension of the metal strip laterally and slightly downwardly, in the direction of offset **18**, to form a first bottom portion, **20**, of the bead, and then offset upwardly and inwardly to a point above the end of the web section **14**, to form a first side, **22**, of the bead, and then downwardly and outwardly at an equal angle to the section **14** with the bead side **22** to form a second side, **24**, of the bead, and then inwardly at an equal angle to the section **14** as the bottom portion **20** to form a second half of the bottom portion, **26**, and then downwardly to form an upright portion lying against the offset end portion of the section **14**. The free edge portion of the runner section **12** may, if desired, be folded over on itself to form a stiffening lip (not shown), as is conventional.

The suspension element or unit is generally designated as **30** and is likewise formed of a strip or bar of sheet metal, which is shaped to have a hook section at one end for engaging from a furring beam, **32**. The furring beam is shown to comprise a channel-shaped bar disposed on a side thereof, and the hook section of the suspension element **30** is formed by laterally offsetting one end portion, **34**, of the strip, of a length slightly greater than a side of the furring beam **32** and then inwardly offsetting the end, **36**, to be normal to the offset portion **34**. A struck-out tongue, **38**, is formed in the metal strip at a distance from the hook portion **34** equal to the height of the web of the furring beam **32**, which tongue **38** is directed away from portion **34** and is offset at an angle in the direction of hook portion **36**.

Runner-engaging means are provided at the opposed end of the suspension element strip, such runner-engaging means being formed by slitting the strip longitudinally, offsetting the adjacent slit portions in opposite directions, at an acute angle to one another, and then bending their

ends inwardly towards one another, and slightly upwardly. In the illustrated embodiment, the other end portion of the strip forming suspension element **30** is doubly slit to provide a center wing, **40**, and two side wings, **42** and **44**, with the latter being oppositely offset relative to the former. The end portion **48** of the side wings **42** and **44** is inwardly and slightly upwardly bent in the direction of the center wing **40**, and the end portion **46** of the latter is likewise inwardly and slightly upwardly bent in the direction of the side wings **42** and **44**. The wings **40**, **42** and **44** are of substantial length and the size of their bent end portions and of the angle between the wings are such that the edges of the ends **46** and **48** are close together, and the distance between the ends of the wings **40**, **42** and **44** is slightly greater than the width of the bead **15** of the runner **10**.

In assembling the runner **10** with the suspension element **40**, the bead **15** is pressed, with its apex foremost, between the edges of the ends **46** and **48** of the wings **42**, **44** and **40**, until the bottom thereof is inserted into the space between the wings **40**, **42** and **44** and rests upon the terminals of the end portions **46** and **48**; the suspension element **30** being formed of metal having an inherent resilience which will permit the springing of the wings back into original position after the bead has been forced between the edges of their bent ends.

As runners **10** are generally suspended at right angles to the furring beams, the strip forming the suspension element **30** is spirally twisted intermediate the hook section at one end thereof and the runner-supporting section at its other end, as at **50**, to dispose the same at right angles to one another.

This completes the description of the runners for forming a tile-supporting grid for a suspended ceiling and of the elements for suspending such runners. It will be readily apparent that by reason of the double thickness at the outer marginal edge portions of the web **14**, of the runner and of the provisional bead **15** at its end, such runner is materially stiffened against bending or sagging. It will also be apparent that the runner of the invention may be quickly and easily assembled with its supporting element by press-fitting the bead into the space between the wing ends of the latter without the use of any tools. It will likewise be apparent that because of the inward taper of the bottom of the bead and of the ends **46** and **48** of the wings **42**, **44** and **40**, whose edges are in close proximity to one another, the ends of the wings will be held in close proximity to one another against separating and against downward displacement, to thereby safely retain the runner bead in place on the suspension elements.

It will be further apparent that numerous modifications and variations may be made in the structural elements for forming suspended tile ceilings of the present invention by anyone skilled in the art, in accordance with the principles of the invention hereinabove set forth, without the exercise of any inventive ingenuity. I desire, therefore, to be protected for any and all such variations and modifications that may be made within the spirit of the invention and scope of the claims hereto appended.

What I claim is:

1. In a grid for a suspended tile ceiling, or the like, the combination of a runner comprising a tile-supporting flange section and an upright section rising from said flange section, said upright section having a bead at its free edge, said bead having sides disposed at an upwardly convergent angle to one another; and a freely suspensible suspension element for said runner, said suspension element having a runner-engaging lower portion comprising downwardly-divergent sections, said sections each having an end portion offset inwardly in the direction of the other with the edges of said end portions spaced a distance apart less than the thickness of the lower part of said bead, said bead adapted to be pressed between said edges into the space between said end portions to have the lower edges of said bead sides rest on said inwardly-offset ends of said end sections.

2. The grid of claim **1**, wherein said bead is integrally formed with said upright section of said runner.

3. The grid of claim **2**, wherein said bead is formed with bottom wall portions extending inwardly and upwardly in the direction of the upper edge of said upright section, said offset end portions of said suspension element sections upwardly bent to substantially underlie said inwardly and upwardly-extending bottom wall portions.

4. The grid of claim **1**, wherein said upright section is formed with an upper marginal edge portion offset laterally relative to its lower portion and said bead is formed from an extension of said upright section, said extension offset laterally and slightly downwardly and then offset upwardly and inwardly in the direction of said upright section to a point thereabove and when downwardly and laterally and then inwardly and upwardly and then downwardly against said offset upper marginal edge portion of said upright section.

5. The grid of claim **1**, wherein said suspension element is formed of a flat strip of material, said strip having a slit formed therein extending inwardly from its lower edge, adjacent sections of said strip to each side of said slit offset diagonally in opposed direction relative to one another, each said section having its end portion offset in the direction of the other.

6. The grid of claim **5**, wherein more than one slit is provided in the end portion of said strip.

7. The grid of claim **5**, wherein means are provided at the other end of said strip for engagement to a fixed structure.

8. The grid of claim **7**, wherein said means comprises a hook portion adapted to engage over the upper side of a furring beam and a tongue is struck out from said strip and bent in position to underlie the underside of said furring beam.

9. The grid of claim **7**, wherein said strip is spirally twisted to have its runner-engaging end disposed at an angle of 90° to its structure-engaging end.

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248—322