Sept. 26, 1967 N. NETZ ETAL 3,343,309

COVED CEILING ASSEMBLY AND BRACKET MEANS THEREFOR

Filed June 8, 1965 3 Sheets-Sheet 1

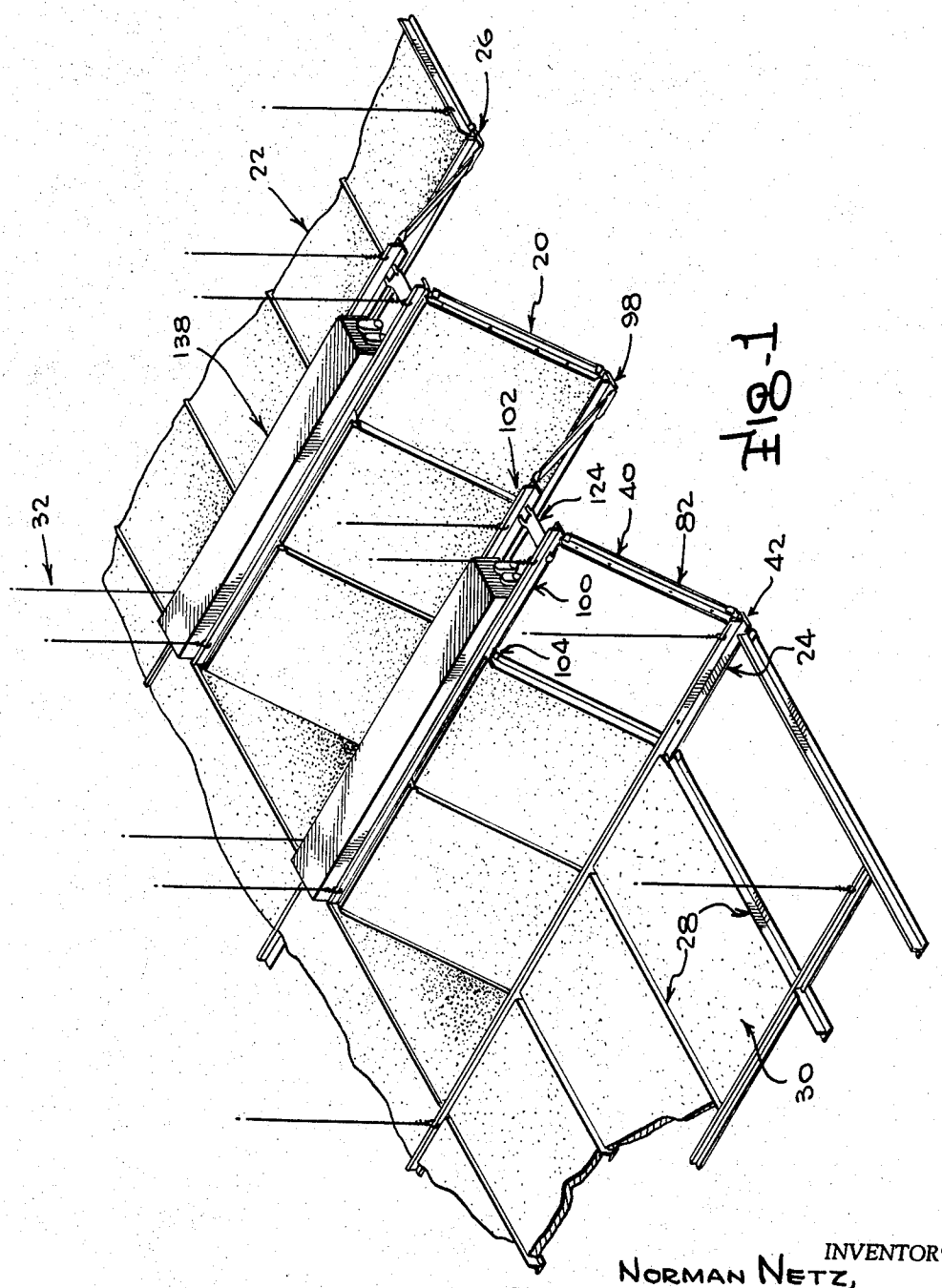


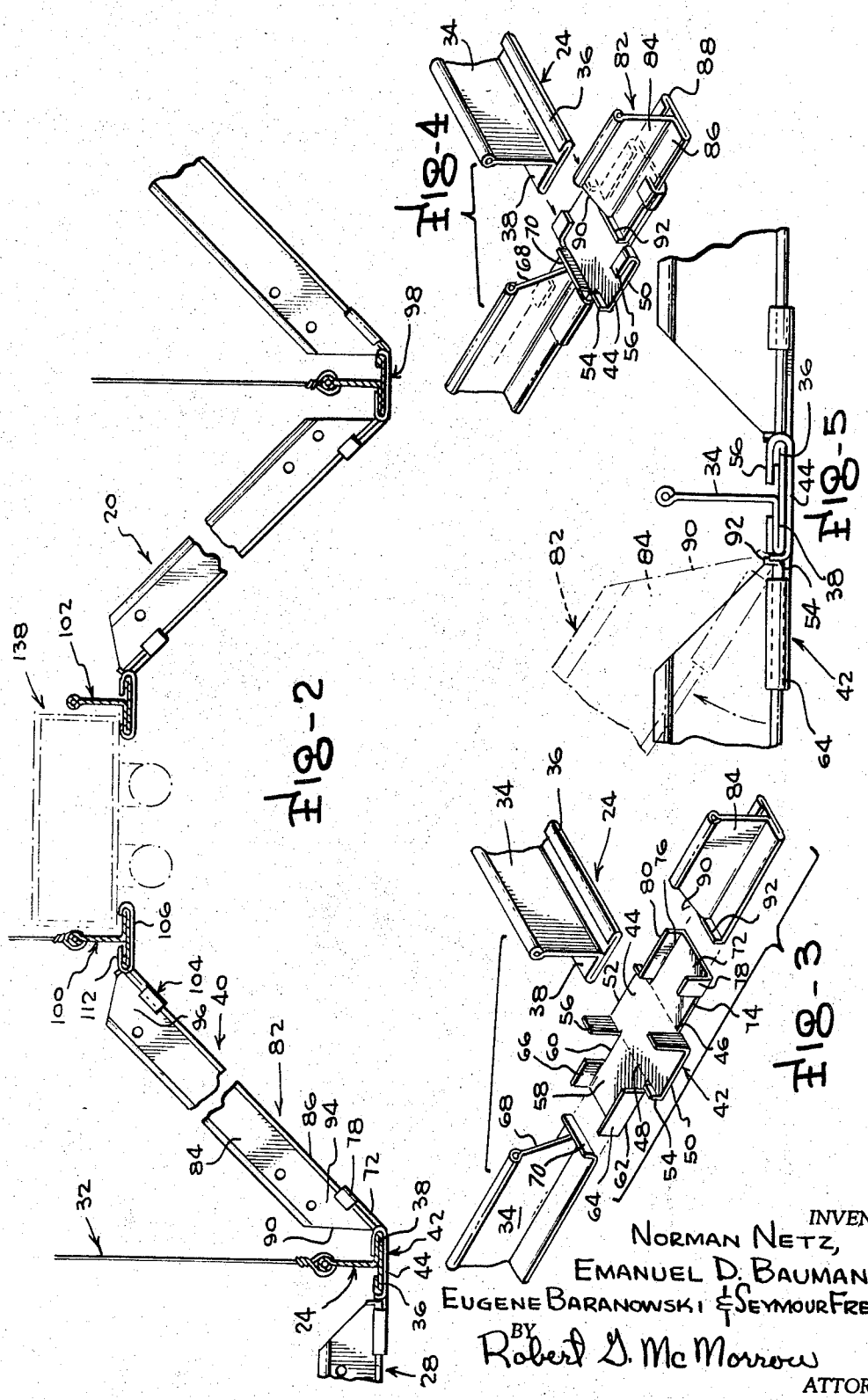
FIG. 1

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COVED CEILING ASSEMBLY AND BRACKET MEANS THEREFOR

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COVED CEILING ASSEMBLY AND BRACKET MEANS THEREFOR

Filed June 8, 1965 3 Sheets-Sheet 3

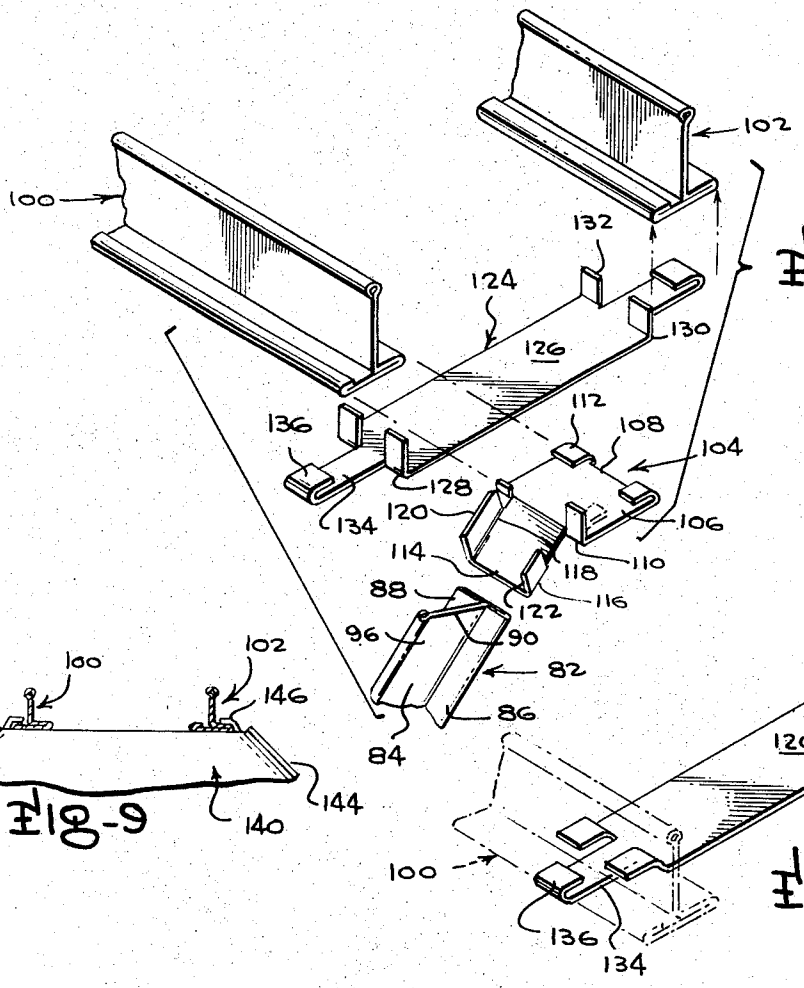


Fig-6

Fig-9

Fig-7

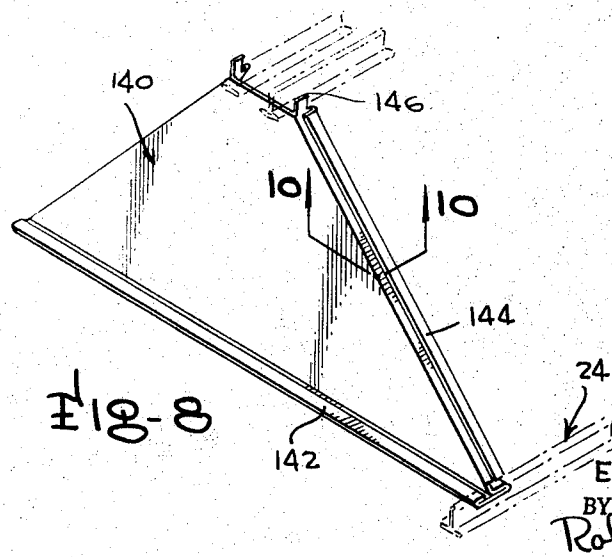


Fig-8

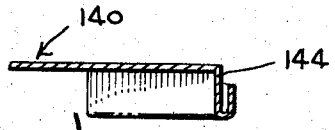


Fig-10

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COVED CEILING ASSEMBLY AND BRACKET MEANS THEREFOR

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ABSTRACT OF THE DISCLOSURE

A coved fixture support in a ceiling structure, the support having bracket means mounted between spaced rails in the ceiling and including bracket elements spanning the distance between the rails.

This invention is directed to overhead ceilings and to fixtures employed in such ceilings. The invention is an improvement on subject matter disclosed in our prior, co-pending application Ser. No. 411,297, filed Nov. 16, 1964.

Basic objectives of this invention include the provision of a ceiling of the type installed by suspension, from an overhead support, including fixtures supported therein, wherein fixture mounting means is provided which permits application of the fixtures at selected locations on the ceiling, and the means being adaptable to variant fixture sizes. A further basic objective is the provision of a support hardware system, permitting the installation of upwardly coved electrical fixtures or the like in existing suspended ceilings with only a minimum modification of the existing structure.

Another object of the invention is to supply a new and novel connection bracket for the establishment of a joint in angularly related supporting members, the bracket being of readily bendable form whereby it is usuable in installations requiring changeable angularity of the elements.

Still another object resides in the provision of improved cross bracing for extension between substantially parallel supports, the cross braces being readily installed after installation of the supports, being adapted to maintain the supports in parallel location, and being arranged in use such that they do not detract from ceiling appearance.

A further object is to provide a ceiling fixture support system wherein the components are fabricated from inexpensive, readily available materials, and one adapted for installation without special skills.

In the application of lighting fixtures and similar appliances in existing overhead suspended ceilings, the situation is occasionally encountered that the original installation contains elements of non-uniform dimension. The present apparatus is adaptable for use in such situations by non-complex modification of elements of the supporting hardware.

Additional objects and advantages will occur to those skilled in the art upon consideration of the following specification, when read in conjunction with the annexed drawings, in which:

FIGURE 1 is a perspective view of a portion of ceiling structure constructed and assembled in accordance with the teachings of this invention;

FIGURE 2 is an end elevational view through a section of the ceiling;

FIGURE 3 is a disassembled perspective view of one type of support intersection hereof;

FIGURE 4 shows the elements of FIGURE 3 in partially assembled condition;

FIGURE 5 is an enlarged elevational view demonstrating in place modification of the elements in phantom lines;

FIGURE 6 is a disassembled perspective view of another type of intersection hereof, and the cross brace means;

FIGURE 7 illustrates the brace as applied to a support (shown in dotted lines);

FIGURE 8 is a perspective view disclosing a novel end panel element hereof;

FIGURE 9 is an enlarged end elevation of the upper connection means of the end panel; and

FIGURE 10 is an enlarged sectional view showing details, taken substantially on the line 10—10 of FIGURE 8, looking in the direction of the arrows.

With more specific reference to the drawings, the system hereof is generally designated therein by reference numeral 20. The system finds its primary intended environment in a suspended ceiling structure 22, such as that shown in FIGURE 1, which includes an overhead roof (not shown) and at least one pair of spaced apart, longitudinally extending rail members 24, 26. A plurality of pairs of transverse rail members 28 intersect the longitudinal rails, and paneling 30 is mounted between the rail members. The rail members are suspended from the roof by cables 32. Each of the rail members is of inverted T-shape and is formed, as by a conventional metal bending operation, to include an upstanding leg 34 and distal and proximal ledges 36, 38, respectively.

The rail members, arranged in an intersecting network, and supporting the blocks 30 of ceiling material therebetween, co-operatively form a ceiling structure disposed in substantially a common horizontal plane.

In the application of light fixtures and similar electrical appliances in such ceilings, it is often desired to cove or upwardly space the fixture in respect to the general flatwise extent of the ceiling. To accomplish this fixture arrangement with minimum modification of the existing ceiling and simplify and expedite the mounting of fixtures in newly constructed ceilings, the present invention provides a fixture support system 40.

The system 40 comprises a lower bracket means 42 (FIGURES 2–5) comprising lower brackets arranged in pairs or otherwise as described below. Each lower bracket includes a generally rectangular, flat, central section 44 having inner and outer side edges 46, 48, opposite end edges 50, 52, and being of a width between the side edges to extend across the ledges of one of the rail members. Each of the side edges 46 and 48 carries a guide lug 54 and a bendable connection ear 56, the respective lugs and ears being oppositely arranged as shown in FIGURE 3 whereby a lug is transversely opposite each ear. Thus, the rail ledges are positioned on the section 44, and the ears are bent thereabout to connect the bracket 42 to the rail. In most instances, this connection would be duplicated on a pair of rails and at a point of intersection of transverse rails 28.

For joining the brackets to the transverse rails 28, the brackets 42 include an outer support plate 58 extending from the edge 48 of the plate 44 between the lug 54 and ear 56 thereof. The outer support plate 58 is of flat, substantially rectangular form, and has lateral edges 60, 62 with an elongated flange 64 on the edge 62 and a short flange 66 on the edge 60. In FIGURES 3 and 4, it will be observed that the ends of the transverse rails 28 are formed with an inwardly angular terminal edge 68 on the leg 34, and a terminal upstanding flange 70 on the ledges. The plate 58 is of a width from edge-to-edge to extend

across the ledges and the flanges **64**, **66** are bent thereabout behind the flange **70** thereby locking the bracket **42** to both the longitudinal and transverse rails at an intersection.

The brackets **42** further comprise an outer support plate **72** extended from the edge **46** of the central plate **44**. The plate **72** includes lateral edges **74**, **76** with a short bendable flange **78** extending from the former and a long flange **80** on the latter.

The support plates **58** and **72** are each adapted to bending with respect to the central plate **44**, whereby they may be positioned at selected angles. FIGURE 5 discloses a bending operation, and in FIGURE 2, two possible arrangements are disclosed—at the right of that figure, the bracket being shown as adapted for use in the installation of two side-by-side fixtures, this is, with each of the support plates upwardly bent.

The formation of a cove mount for a fixture further involves a plurality of side members **82** formed of the inverted T-stock of the rail members. Like the rail members, each side member has an upstanding leg **84** and ledges **86**, **88**. The ends of the side member legs are inwardly angled as at **90** to permit angular relation of the side members to a rail without interference, and the side members have end flanges **92** to aid in the bracket connections.

The side members include a bottom end **94** and a top end **96** and the bottom ends are engaged by the outer support plates **72** of the lower brackets with the flanges **78** and **80** engaged about the ledges **86** and **88**. In the event that two side-by-side cove mountings are desired as shown in FIGURES 1 and 2, both the inner and outer support plates of an intermediate bracket **98** engage side members, and each is upwardly bent with respect to the central member.

For each fixture or longitudinal row thereof to be installed, a pair of upper longitudinal rails **100** and **102** is supplied which may be suspended from the roof if convenient, or merely supported by the brackets hereof. The upper rails are connected to the side members **82** by upper bracket means **104** best shown in FIGURE 6. As in the case of the bracket, the upper brackets are mounted in opposite pairs and each comprises a longitudinal rail support plate **106** of substantially rectangular form. The plate **106** has an inner edge **108** and outer edge **110** and spaced apart, bendable lips **112** are provided thereon. The plate **106** underlies the rail **100** or **102** and the lips **112** are reverted about the ledges thereof. Extended from the edge **110** between the lips **112** thereof is a side plate **114** for engagement with the top end **96** of one of the rail members **82**. The plate **114** has marginal edges **116**, **118** and is downwardly and outwardly inclined at any selected angle to meet the side member inclination. Bendable tabs **120**, **122** are provided and are bent about the ledges **86** and **88**.

For the positive spacing of the upper rails **100**, **102**, and to obviate any possibility of a fixture supported therebetween being dislodged accidentally, the invention comprehends the provision of new and novel cross brace elements **124** employed at spaced locations along the rail. In FIGURES 6 and 7, it is seen that each element **124** comprises an elongated, flat, substantially rectangular strap **126** with end edges **128**, **130**, and of a length between the end edges to extend across the rails **100**, **102** with the end edges generally aligned with the inner sides of the ledges of the rails. A pair of bendable securing elements **132** is provided on each end and a tongue **134** extends outwardly therebetween. The tongue has reverted tip elements **136** for engagement about the rail outer ledges whereby the braces are secured to the rails in the manner illustrated in FIGURE 7.

Fixtures **138**, such as fluorescent lamps, are mounted between the rails **100**, **102** and may extend the full length of a ceiling, or if desired, be arranged in spaced coves. In the latter case, an end panel arrangement (FIGURES 8 through 10) is employed for closing the ends of the cove. The panel **140** is of generally triangular form and has a base **142** formed in the manner of the rail members whereby bracket means may be employed to connect it to the longitudinal rail. The sides of the panel have reverted flanges **144** providing a connection for a section of the paneling **30**, the sides terminating at their upper ends in an extended connection means comprising a tab **146** for bending about the ledge of the upper rail adjacent thereto.

Various manners of installation and employment of the apparatus hereof will occur to those skilled in the art from a consideration of the above. Having thus described and illustrated the invention it will be understood that this description and illustration is offered only by way of example, and that the invention is to be limited in scope only by the appended claims.

What is claimed is:

1. In an overhead ceiling construction which includes at least one pair of spaced longitudinal rails, a coved fixture support assembly comprising:

bracket means engaging the longitudinal rails at spaced locations in substantially transverse pairs;

the bracket means comprising sections with edges and bendable connection ears on said edges;

side members supported by the bracket means in upwardly inclined positions;

upper bracket means secured to each of the side members;

longitudinally extending upper rails secured to the upper brackets in substantially parallel pairs;

cross brace means extending between the upper rails at selected intervals;

the cross brace means comprising elongated straps having ends, and having securing elements on said ends for engagement with the upper rails; and fixtures mounted between the upper rails.

2. In an overhead ceiling construction which includes at least one pair of spaced longitudinal rails, and a plurality of transverse rails, a coved fixture support assembly comprising:

bracket means engaging the longitudinal rails at spaced locations in transverse pairs, and engaging adjacent transverse rails;

the bracket means comprising a central section having side edges, bendable connection ears on the side edges, the central section being disposed against one of the longitudinal rails with the ears bent thereabout, a support plate extending from the central section, and bendable flanges on the support plate;

side members supported by the bracket means in upwardly inclined position, the support plate of the bracket means engaging one of the side members with the flanges bent thereabout;

upper brackets secured to each of the side members;

longitudinally extending upper rails secured to the upper brackets in substantially parallel pairs;

cross brace means extending between the upper rails at selected intervals, the cross brace means comprising an elongated strap having ends, bendable securing elements on the ends of the strap, a tongue projecting outwardly from each of the ends and having a reverted tip engaged on the upper rails, and the securing elements being bent about the upper rails; and

fixtures mounted between the upper rails.

3. In an overhead ceiling construction which includes a roof structure, at least one pair of spaced apart, longitudinally extending rail members, plural pairs of transverse rail members secured to the longitudinally extending rail members at spaced intersections, each of the rail members being of inverted T-shape and having an upstanding leg and distal and proximal ledges on opposite sides of the leg, hanger cables secured to the legs and to the roof structure to suspend the rail members in a

network, and the rail members supporting horizontally arranged blocks of ceiling material between selected ledges forming a ceiling disposed substantially in a given plane; a coved lighting fixture and support assembly comprising:

(I) lower means:

the lower bracket means comprising oppositely arranged pairs of brackets, each bracket including a substantially rectangular central section including inner and outer side edges and end edges, and of a width from edge-to-edge to extend across the ledges of one of the longitudinally extending rail members;

oppositely arranged pairs of guide lugs and connection ears extending from the central section;

the connection ears being reverted about the ledges to connect the central section to the rail members;

an outer support plate extending from the outer side edges of the central section, the outer support plate having lateral edges with bendable flanges thereon including an elongated flange and a short flange;

the outer support plate being of a width from edge-to-edge to extend across the ledges of a transverse rail member, and underlying said member;

the flanges of the outer support plate being reverted about the ledges of the transverse rail members;

an inner support plate secured to the central section at the inner side edge thereof, the inner support plate being extended upwardly from the central section at a selected angle;

the inner support plate having lateral edges with bendable flanges thereon, including a short flange and a long flange;

the flanges of the inner support plate being arranged oppositely with respect to the flanges of the outer support plates;

(II) side members:

the side members being of elongated, inverted T-form, including legs and outward ledges;

the side members being arranged in pairs and having bottom and top ends;

the bottom ends being engaged on the inner support plates of the lower brackets, and the flanges of said inner support plates being extended about the ledges thereof;

(III) upper bracket means:

the upper bracket means including a plurality of brackets arranged in pairs;

each upper bracket having a longitudinal rail engagement plate with an inner edge and an outer edge;

the inner and outer edges having bendable lips thereon;

a downwardly and outwardly inclined side plate connected to the outer edge of the rail support plate;

the side plate having marginal edges with bendable tabs thereon;

the side plate underlying the side member top ends and the tabs being engaged about the ledge thereof;

(IV) upper longitudinal rail members arranged in a spaced apart pair and engaged by the longitudinal rail engagement plates, each rail member having inner and outer ledges, the ledges having side edges;

(V) cross brace means at selected intervals extending between the upper longitudinal rail;

the cross brace means comprising a plurality of elongated, substantially rectangular, flat straps with end edges;

each strap being of a length between the end edges to extend between the outer side edges of the inner ledges thereof;

bendable securing elements extending outwardly from the end edges of the strap and connected over the outer ledges of the upper longitudinal rails;

a tongue projecting outwardly between the securing elements, underlying the ledges of the upper longitudinal rails;

each tongue having a tip element reverted over the outer ledge; and

(VI) elongated fixture housing means supported between the outer ledges of the upper longitudinal rails and on the cross brace means.

4. The invention of claim 3, and

an end panel supported between the longitudinal rails, the end panel having connection means therein for securing it to the upper longitudinal rail.

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