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(54) **HANGER BAR ASSEMBLIES FOR
RECESSED LUMINAIRES**

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(57) **ABSTRACT**

A recessed luminaire having a hanger bar assembly including a first hanger bar member having an elongated slot and a second hanger bar member, adjacent to the first hanger bar member, having at least three retaining projections extending into the elongated slot, for slidably engaging the first hanger bar member.

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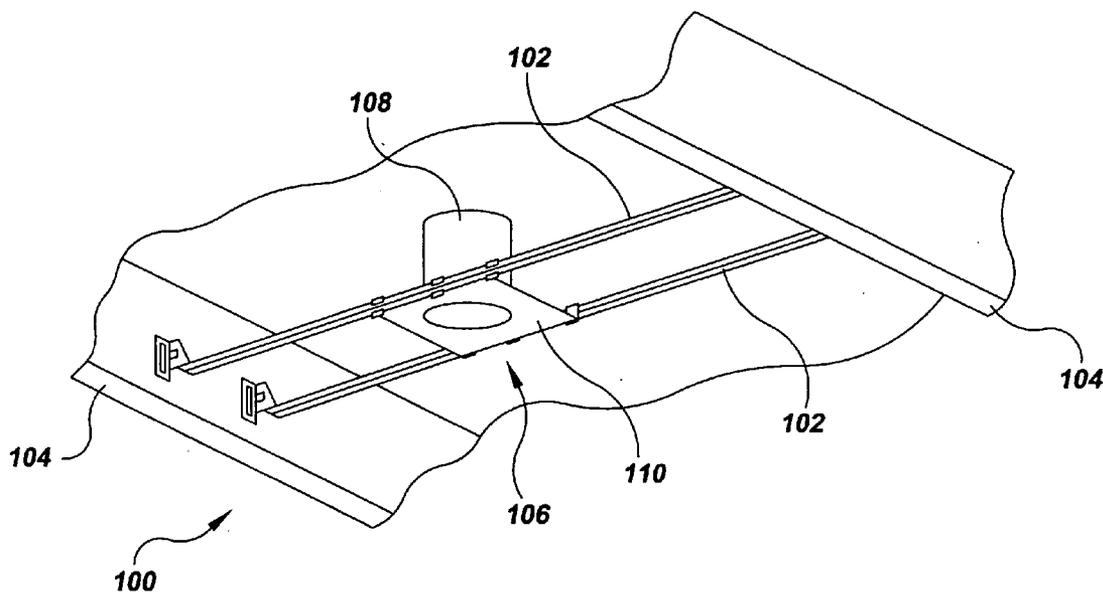
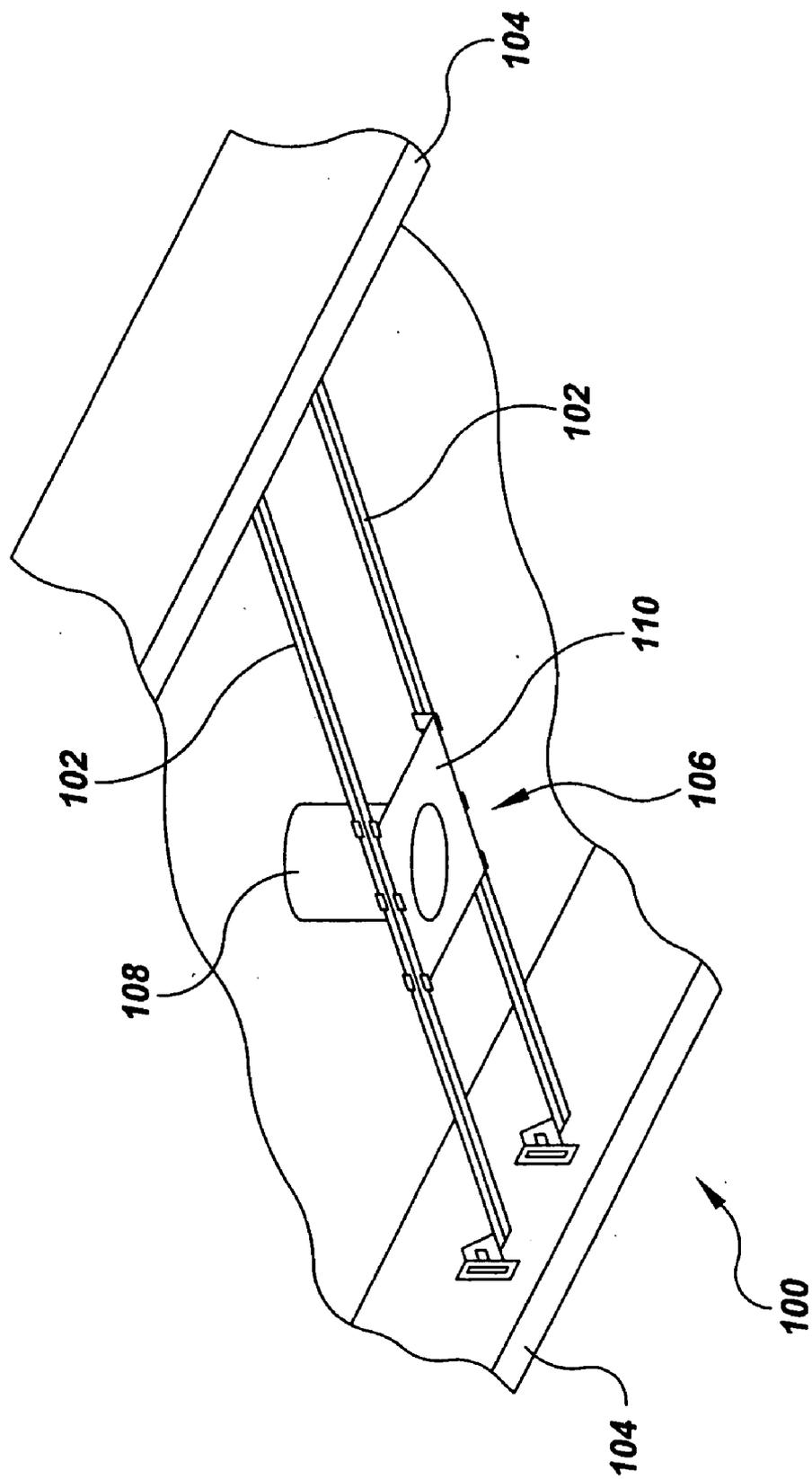
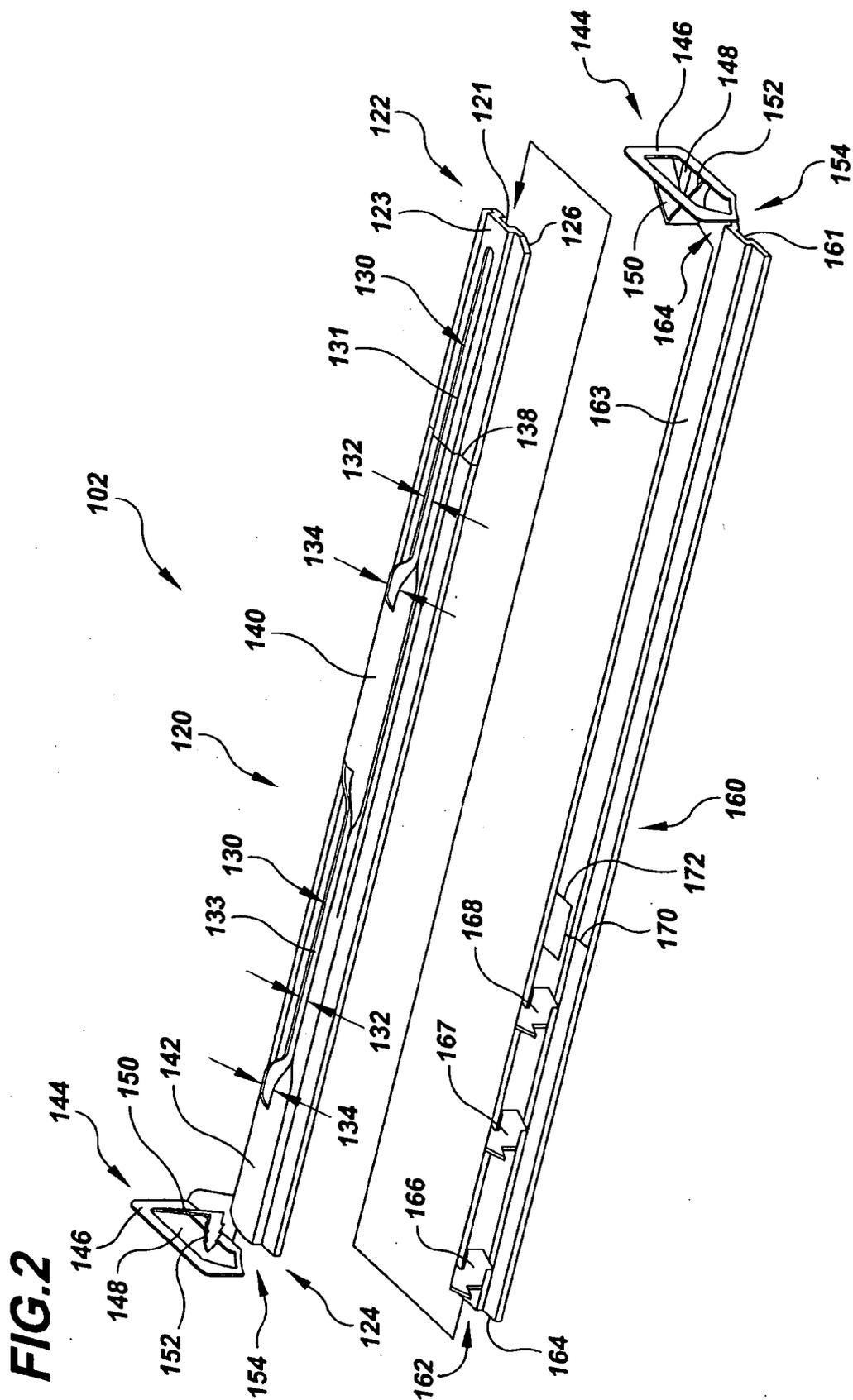
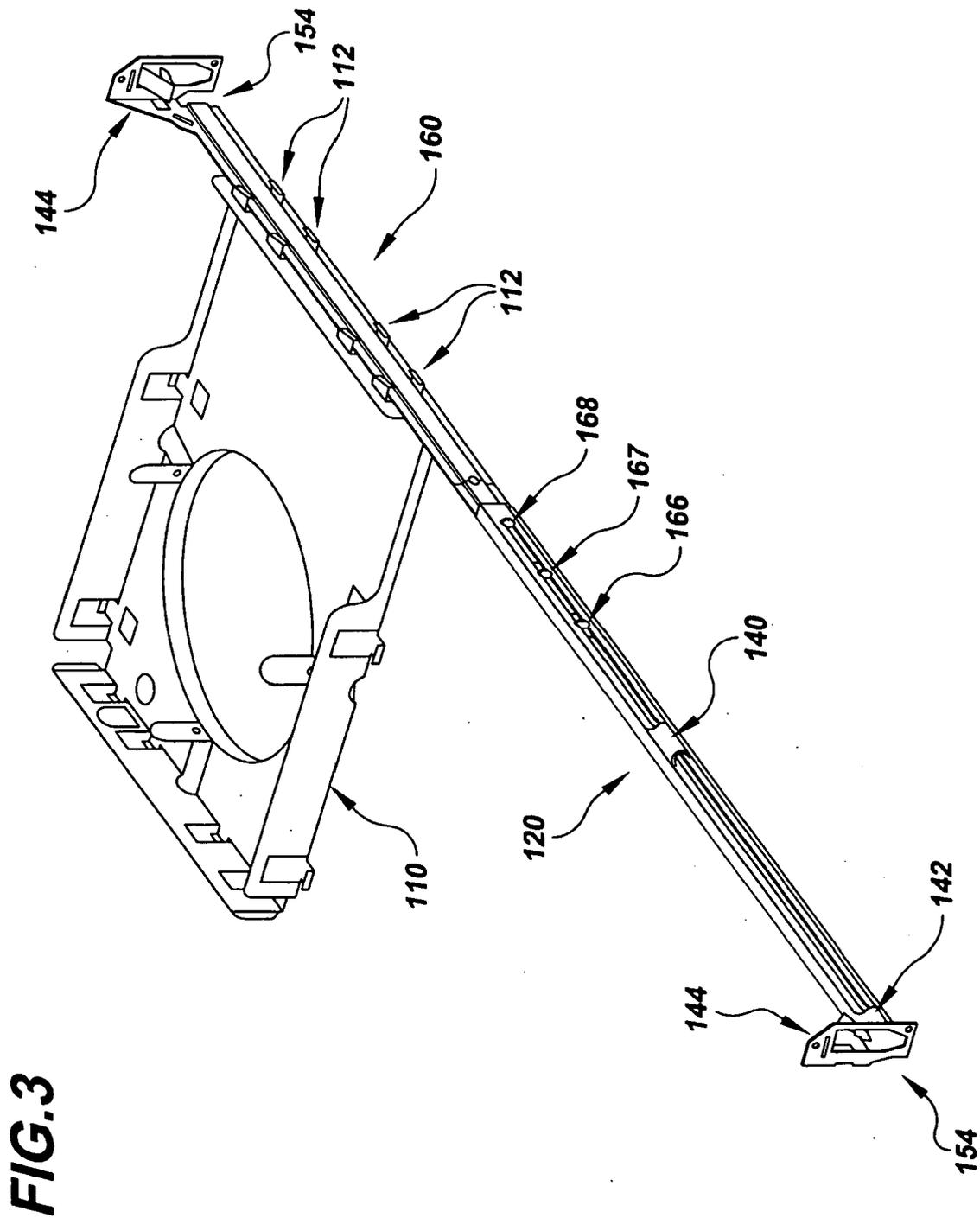


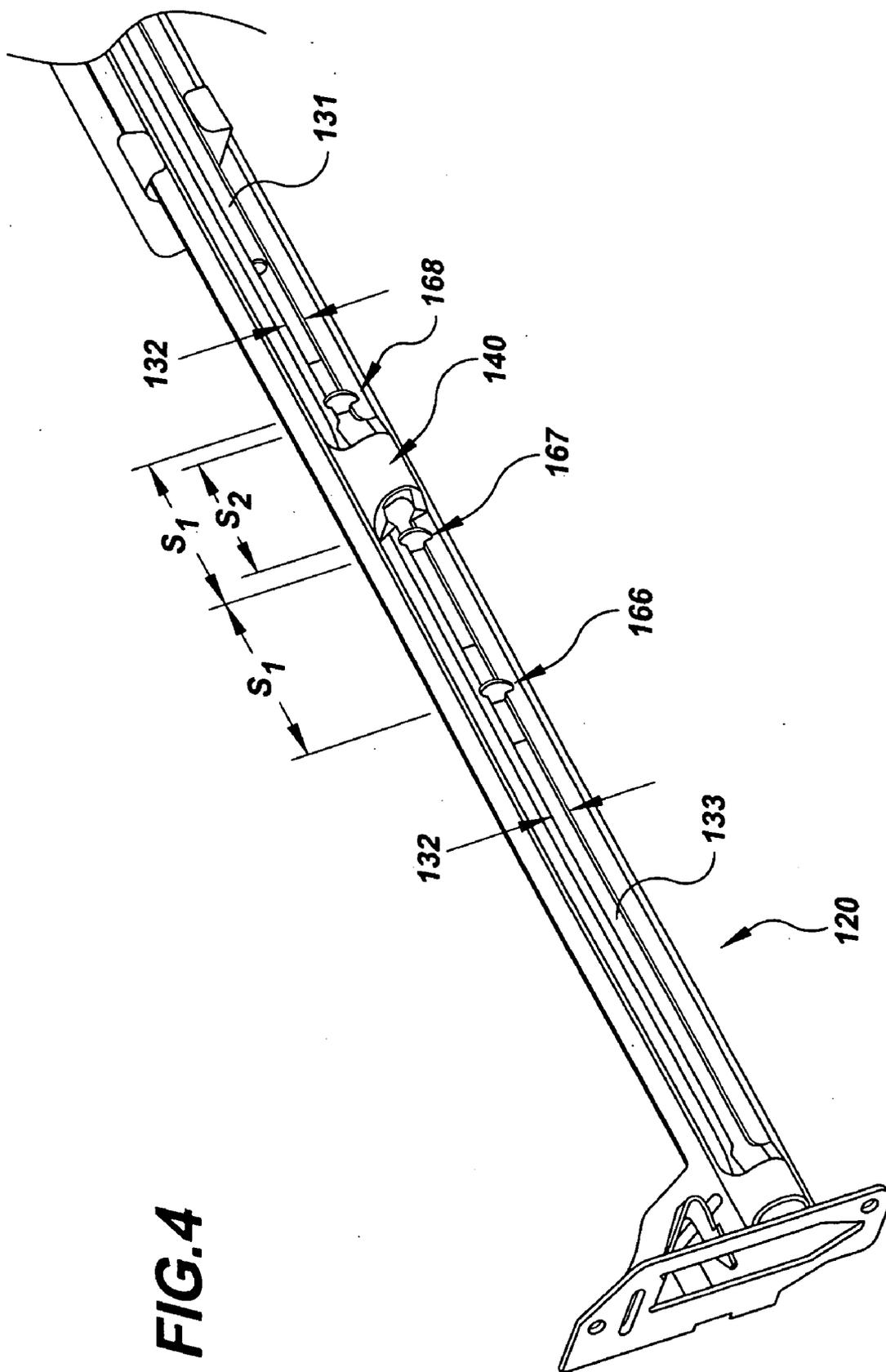
FIG. 1

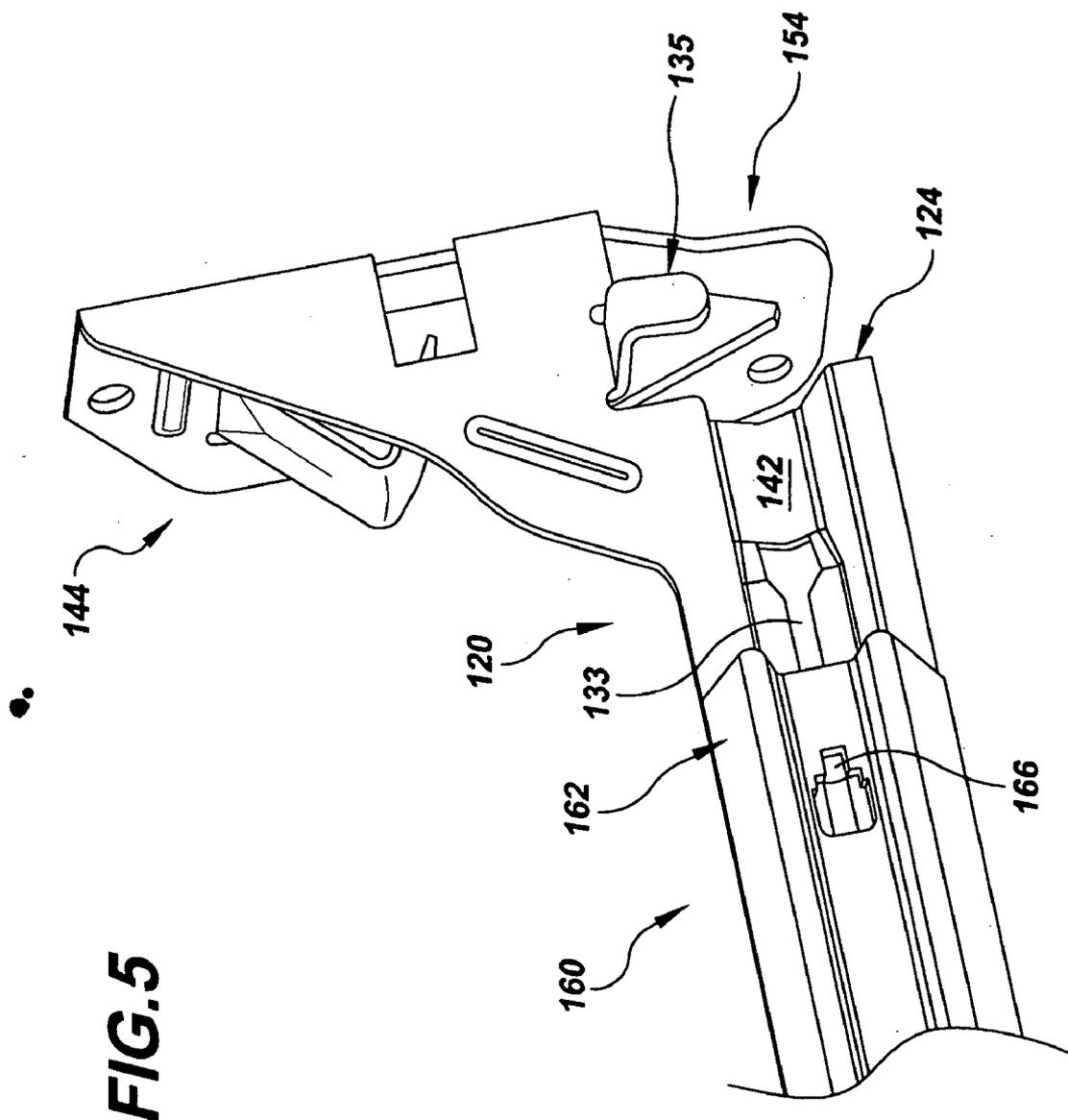


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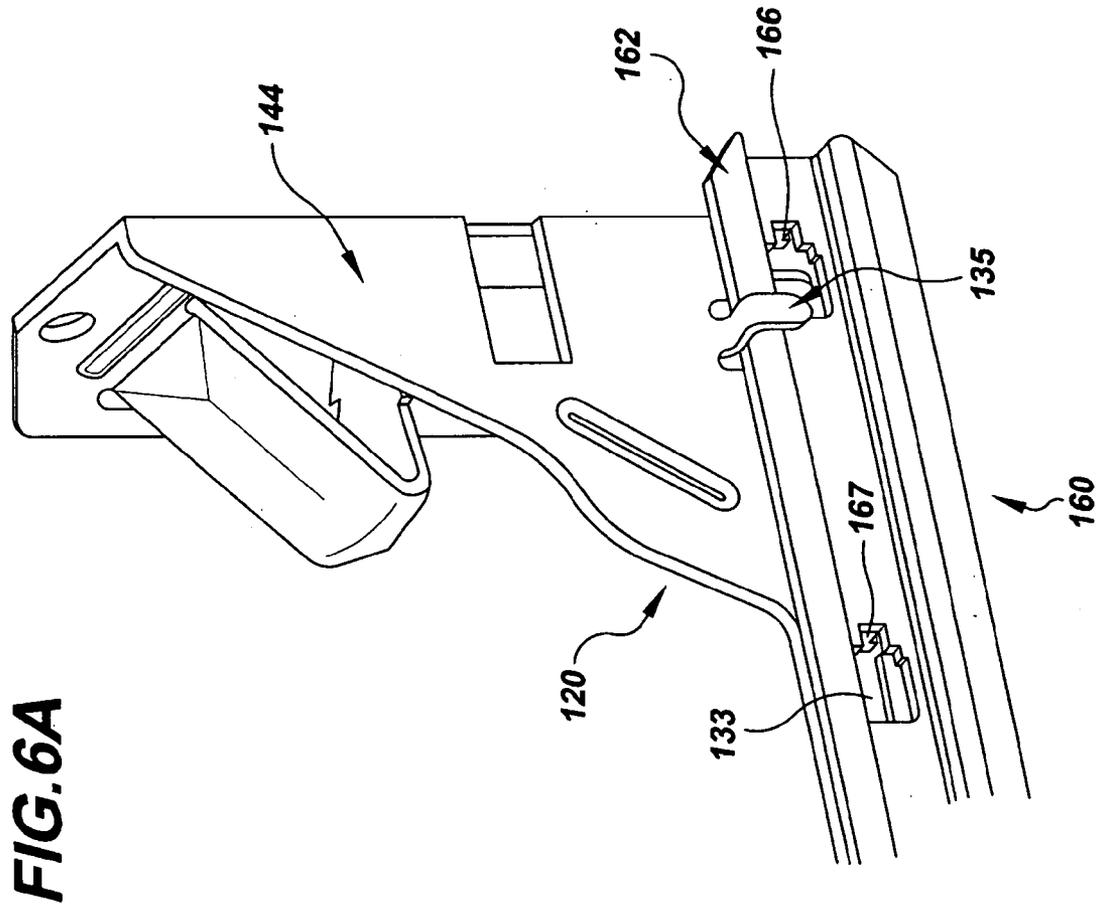
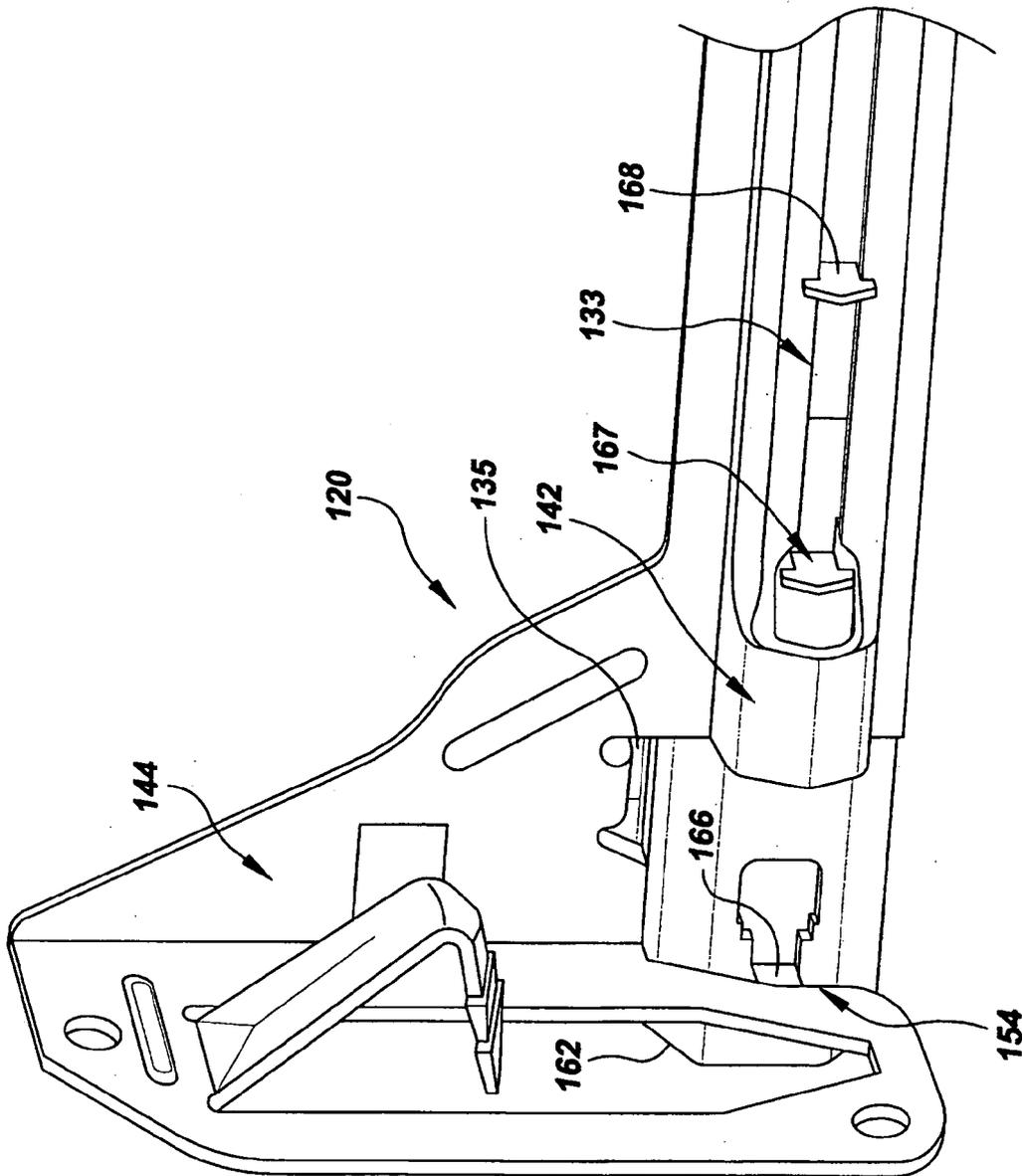


FIG. 6A

FIG. 6B



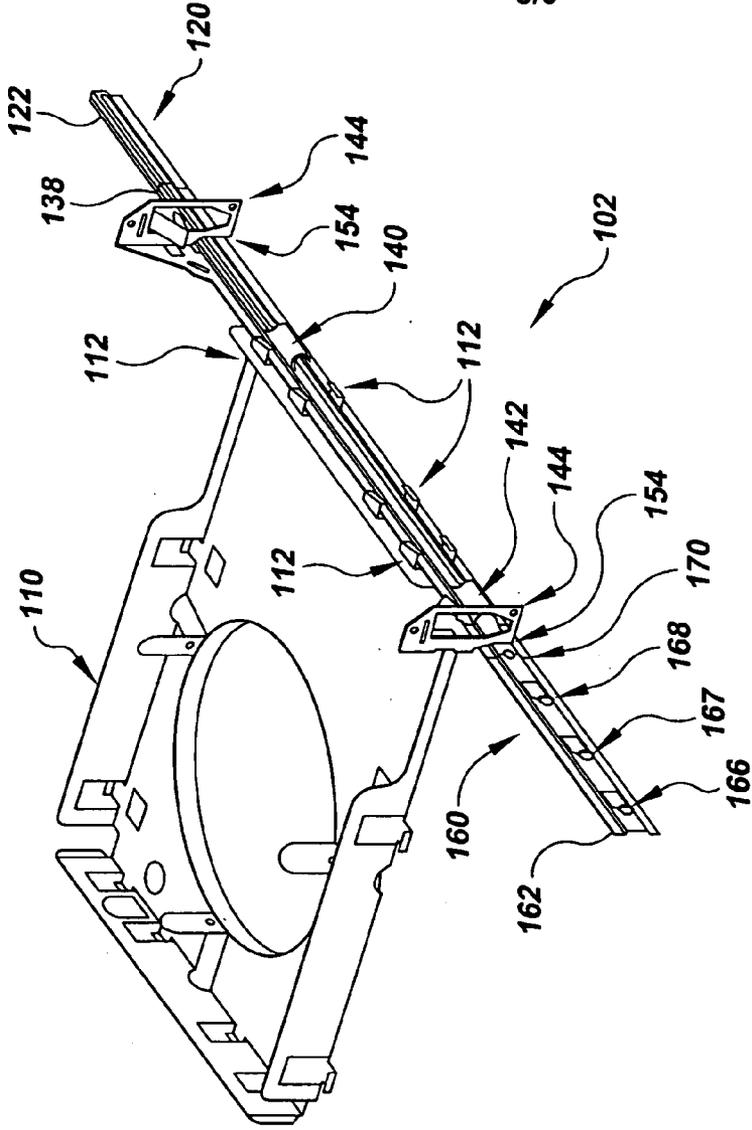


FIG. 7

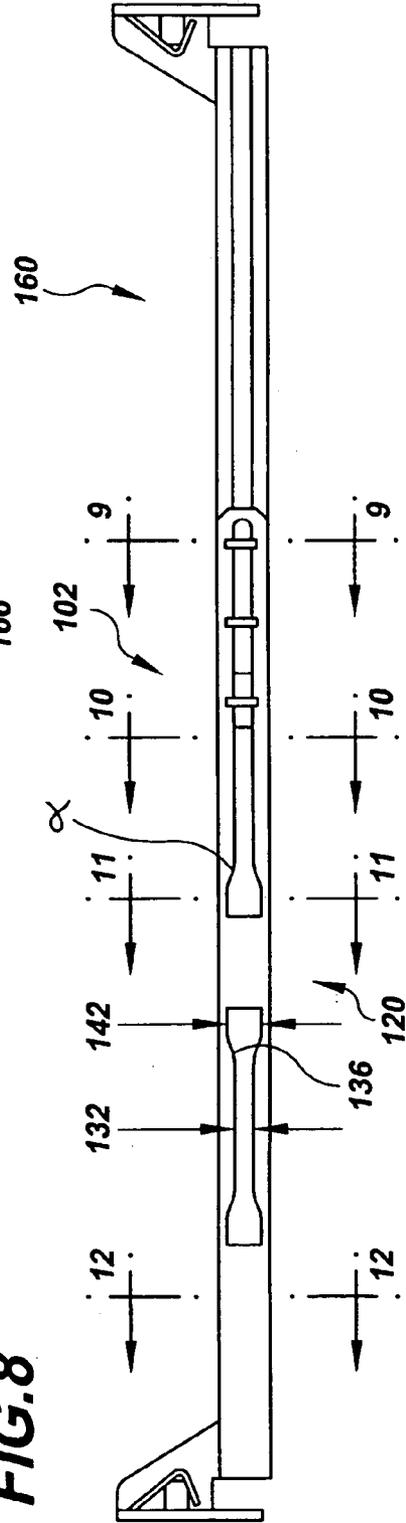


FIG. 8

FIG. 9

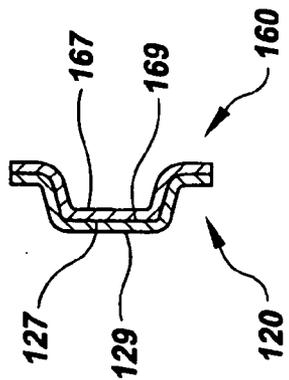


FIG. 10

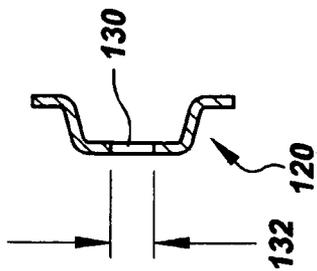


FIG. 11

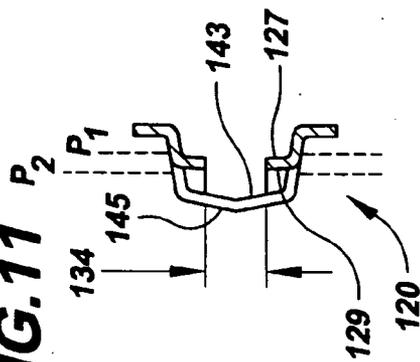


FIG. 12

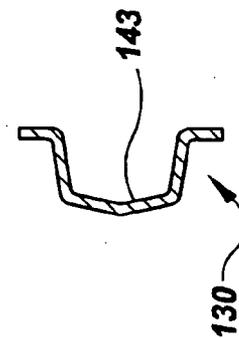
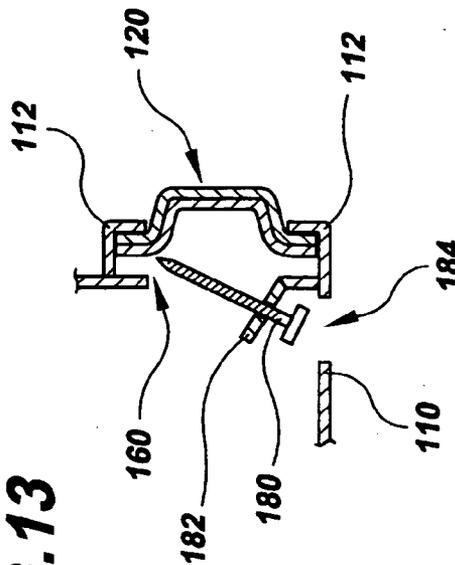


FIG. 13



HANGER BAR ASSEMBLIES FOR RECESSED LUMINAIRES

TECHNICAL FIELD

[0001] This disclosure generally relates to support brackets on an extensible column mounted between two surfaces such as ceiling attachment fittings, and, more particularly, to hanger bar assemblies for recessed luminaires.

BACKGROUND

[0002] The “INESA Lighting Handbook” published by the Illuminating Engineering Society of North America, is incorporated by reference here in its entirety. As discussed in chapter seven of that handbook, a “luminaire” is a device for producing, controlling, and distributing light. It is typically a complete lighting unit consisting of one or more lamps, sockets for positioning and protecting the lamps and for connecting the lamps to a supply of electric power, optical devices for distributing the light, and mechanical components for supporting or attaching the luminaire. Luminaires are also sometimes referred to as “light fixtures.”

[0003] Luminaires are usually classified by their application, such as residential, commercial, or industrial. However, a particular luminaire can often be used in more than one application, depending upon its performance characteristics. For example, recessed downlights are used in both commercial and residential applications where they are typically mounted behind a ceiling wall with an opening to produce illuminance on floor or workplane below.

[0004] These “recessed downlights” are typically categorized in one of two groups. Incandescent, compact fluorescent, and metal-halide lamp downlights usually have relatively small apertures so as to provide low luminance at high viewing angles. Fluorescent lamp troffers, on the other hand, use long, tubular lamps that are typically suspended in tile ceiling systems. However, incandescent, compact fluorescent, and metal-halide downlights can also be suspended in tiles ceilings and recessed lighting systems can be provided in a variety of other configurations.

[0005] Various support systems have been employed to carry recessed luminaires in buildings and other structures. For example, recessed fixtures are often suspended between joists, or other parallel support structures, on a pair of “hanger bars” or “bar hangars” extending between the joists. Similar hangar bars arrangements are used to suspend recessed downlights between the rails in a suspended, tile ceiling.

[0006] These conventional hanger bars are often formed in one-piece with a fixed length so as to provide adequate structural rigidity at a relatively low cost. For example, U.S. Pat. No. 5,505,419 to Gabrius (assigned at issuance to Juno Lighting) is incorporated by reference here in its entirety and discloses a one-piece bar hanger having a stiffening rib that extends along substantially the entire length of the bar hanger. In order to change its length, the bar must be broken along a single score line. Since the length of the hanger bar cannot be variably adjusted, its use is often limited to joists, or other supports, having a standard and consistent spacing.

[0007] Hanger bars have also been devised with an adjustable two-piece configuration. For example, U.S. Pat. No. 5,029,794 to Wolfe (assigned at issuance to Prescolite) is

incorporated by reference here and discloses a pair of bar hanger elements that are nested in a slidable relationship relative to each other. Each bar hanger element is identical in construction with an elongated slot and two retaining projections.

[0008] U.S. Pat. No. 4,723,747 to Karp et al. (assigned at issuance to Capri Lighting) is also incorporated by reference here and discloses a two-piece bar hanger with an elongated slot as well as a longitudinally extended “dome,” or projection, to facilitate nesting. One of the hanger bar elements has an arrow-shaped retaining projection while the other hanger bar element has a foot-like retaining projection that is received within the slot.

[0009] As with single-piece hangar bars, two-piece hangar bars may be trimmed for use with smaller joist spacings. However, these hanger bar assemblies must generally be disassembled prior to altering their length. Furthermore, while such two-piece arrangements permit installation between supports or joists of various spacings, they generally suffer from a lack of stability that fails to provide adequate support for the suspended luminaire, especially the hanger is installed in its fully-extended, or nearly fully-extended, position.

[0010] In this regard, U.S. Pat. No. 6,076,788 to Akiyama (assigned at issuance to Cooper Industries) is incorporated by reference here and discloses a hanger bar assembly with a first bar hanger having a plurality of longitudinal slots, each separated by a reinforcing formation. A second hanger bar member having a plurality of spaced retaining projections is interfitted with the first hanger bar member. At least one of the retaining projections engages at least one of the slots in order to couple the hanger bar members as they are extended longitudinally.

[0011] Each of the Akiyama hanger bar members may also include a score line for allowing a portion of the hanger bar member to be removed in order to reduce the overall length of the hanger bar assembly. Although such hanger bar assemblies generally provide adequate support in their fully-extended position, the hanger bar members must be separated in order to change their length by breaking each member along its score line.

SUMMARY

[0012] These and other drawbacks of such conventional technologies are addressed here by providing a luminaire, such as a recessed downlight, with a hanger bar assembly including a first hanger bar member having an elongated slot and a second hanger bar member adjacent to the first hanger bar member. The second hanger bar member includes at least three retaining projections extending into the elongated slot, for slidably engaging the first hanger bar member.

[0013] The hanger bar assembly may also include at least one bridge spanning the elongated slot, thereby forming a first slot portion and a second slot portion separated by a first distance. The adjacent retaining projections are separated by a second distance that is greater than the first distance and the retaining projections can slide beneath the bridge. A second bridge may also be disposed on a proximal end of the first hanger bar. The second bridge spans an end of the elongated slot and is configured such that the retaining projections slide beneath the second bridge and out of the elongated slot.

[0014] Other embodiments of the hanger bar assembly may include a retaining tab disposed adjacent and opposite the second bridge. The retaining tab is configured for slidably engaging the second hanger bar member as the retaining projections exit the elongated slot. Therefore, the retaining tab helps maintain the second hanger bar member adjacent the first hanger bar member.

[0015] Yet another embodiment may include a first attachment structure disposed on the first hanger bar member and a second attachment structure disposed on the second hanger bar member. The first and second attachment structures are configured to allow the first and second hanger bar members to slidably extend there beyond, respectively.

[0016] A first score line may be disposed on the first hanger bar member between the bridge and a distal end, the first score line intersecting the elongated slot, and a second score line disposed on the second hanger bar member between a proximal end of the second hanger bar member and the retaining projections. The score lines are positioned such that the first score line extends beyond the second attachment member and the second score line extends beyond the first attachment member when the hanger bar assembly is in a fully retracted position. The second hanger bar member may further include a scoring aperture extending therethrough and intersecting the second score line.

[0017] The first and second attachment members may also include an integral mounting tab and a mounting aperture where the suspended member includes a plurality of opposed attachment tabs for slidably engaging the first and second hanger bar members. The suspended member may further include a securing arrangement for locking the first hanger bar member, the second hanger bar member, and the suspended member in position relative to each other.

[0018] Yet another embodiment of a hanger bar assembly includes a first hanger bar member having an elongated slot and a bridge, the bridge spanning the elongated slot. A second hanger bar member is adjacent the first hanger bar member and includes a plurality of retaining projections extending into the elongated slot and slidably engaging the first hanger bar member. The retaining projections are configured to slide beneath the bridge.

[0019] Yet another embodiment of this technology offers a luminaire with means for providing illumination. The illumination means is supported by first and second hanger bar members where the first hanger bar member has an elongated slot and the second hanger bar includes means for retaining the second hanger bar member adjacent the first hanger bar member. The means for retaining extends into the elongated slot and slidably engages the first hanger bar member. The first and second hanger bar members further include means for attaching the first and the second hanger bar members to a respective support structure, the means being disposed on a proximal end of each of the first and second hanger bar members.

[0020] Also disclosed here is a method of assembling a hanger bar assembly by slidably engaging a first hanger bar member including a first proximal end and a first distal end with a second hanger bar member including a second distal end and a second proximal end such that the first and second hanger bar members are adjacent to each other. The first and second hanger bar members are slid relative to each other

such that the first distal end extends beyond the second proximal end and the second distal end extends beyond the first proximal end. An unwanted portion is removed from each of the first and second distal ends and the first and second proximal ends are attached to an adjacent support member. For example, the first and second hanger bar members may be kept adjacent to each other during the removing step.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] Various aspects of the invention will now be described with reference to the following figures ("FIGs.") in which the same reference numerals are used to designate corresponding parts throughout each of the several views.

[0022] FIG. 1 is a bottom view of a recessed luminaire installation including two hanger bar assemblies.

[0023] FIG. 2 is an exploded view of a hanger bar assembly in FIG. 1 where the top plane corresponds to front plane of FIG. 1.

[0024] FIG. 3 is an assembled view of the hanger bar assembly of FIG. 2 connected to a plaster plate and arranged in a fully-extended configuration where the side plane corresponds to the top plane of FIG. 2.

[0025] FIG. 4 is an enlarged view of an end portion of the hanger bar system of FIG. 3, arranged in a partially-extended configuration.

[0026] FIG. 5 is an enlarged rear view of the hanger bar assembly of FIG. 4 arranged in a shorter configuration than FIG. 4.

[0027] FIG. 6A is a sequential view of the hanger bar assembly of FIG. 5 arranged in a shorter configuration than FIG. 5.

[0028] FIG. 6B is a rear view of the hanger bar assembly of FIG. 6A arranged in the same configuration as FIG. 6A.

[0029] FIG. 7 is an oblique view of the hanger bar system as shown in FIG. 3, in a retracted position.

[0030] FIG. 8 is a side view of the hanger bar assembly shown in FIG. 3.

[0031] FIG. 9 is a cross-sectional view taken along line 9-9 in FIG. 8.

[0032] FIG. 10 is a cross-sectional view taken along line 10-10 in FIG. 8.

[0033] FIG. 11 is a cross-sectional view taken along line 11-11 in FIG. 8.

[0034] FIG. 12 is a cross-sectional view taken along line 12-12 in FIG. 8.

[0035] FIG. 13 is a partial sectional view of a securing arrangement for a hanger bar system constructed according to the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0036] FIG. 1 illustrates a typical installation for a recessed luminaire 100 including a pair of spaced hanger bar assemblies 102. Although a recessed downlight is illustrated in FIG. 1, the hanger bar assemblies may be used with a

variety of other recessed and non-recessed luminaires, or other devices. The hangar bar assemblies **102** are preferably attached at each end to horizontal parallel support members, such as the joists **104** shown in **FIG. 1**. However, they may also be attached to a variety of other support members that are neither horizontal or parallel.

[0037] The hanger bar assemblies **102** support what is broadly referred to here as a suspended member **106**. In **FIG. 1**, the suspended member includes a housing or "can" **108** that rests on a plaster plate or "frame" **110**. The plaster plate **110** includes attachment tabs **112** that attach the plaster plate **110** to the hanger bar assemblies **102**. The attachment tabs **112** may also help to secure the individual hanger bar members of the hanger bar assembly **102** adjacent to each other as discussed below.

[0038] As illustrated in **FIG. 2**, each hanger bar assembly **102** includes a first hanger bar member **120** and a second hanger bar member **160**. The first hanger bar member **120** has a first end **122** with chamfered corners **126**. For example, the corners can be chamfered at a 45 degree angle relative to the longitudinal direction. However, a variety of other edge finishing techniques and/or surface preparations may also be used.

[0039] The first hanger bar member **120** includes an elongated slot **130** which is spanned by a first reinforcing bridge **140** to form a first slot portion **131** and a second slot portion **133**. In its preferred form, the first slot portion **131** of the elongated slot **130** has a first width **132** near its first end **122** that extends along a substantial portion of its length. The elongated slot **130** may also include a second width **134** at the other end, which is greater than the first width **132**. As shown in **FIG. 2**, the second width **134** of the first slot portion **131** is preferably provided in the area of the first reinforcing bridge **140**.

[0040] An angled transitional surface **136** (best illustrated in **FIG. 8**) connects the first width **132** with the second width **134**. For example, the angled surface **136** can be disposed at a 45 degree angle relative to the longitudinal direction as shown in **FIG. 8**. However, a variety of other angles and/or curves may be used to form the transitional surface **136**.

[0041] A first score line **138** may be formed across the width of the first hanger bar member **120**. The precise form and dimensions of the score line **138** can vary widely. However, the example illustrated here, the first score line **138** is a straight line and is approximately 0.02 inches deep. In the event that it becomes necessary to fit between relatively narrowly spaced support members, the first hanger bar member **120** can be broken along first score line **138** to shorten its length.

[0042] A second reinforcing bridge **142** reaches from one end of the second slot portion **133** to a second end **124** of the first hanger bar member **120**. The second slot portion **133** also includes first width **132**, which extends along a substantial portion of the longitudinal dimension of the slot portion **133**, and wider a second width **134**. The second width **134** is provided at both ends of the second slot portion **133** which may also include a transition sections similar to transition section **134** in the slot portion **131**.

[0043] Also provided at the second end **124** of the first hanger bar member **120** is an attachment structure **144** for securing hanger bar member to a support, such as a wooden

joist. The attachment structure **144** may be integrally formed with the first hanger bar member **120**, as illustrated here, or it may be separately formed and subsequently attached to the second end **124**.

[0044] The attachment structure **144** includes an end mounting plate **146** having a hole or aperture **148** and an integral mounting tab **150**. For example, the end mounting plate **146** may be cut and folded to form the aperture **148** and tab **150**. The attachment structure **144** can be secured to a support member or joist by striking the tab **150** with a hammer, thereby driving the free end into the support member or joist. The wedge shaped serrations **152** facilitate entry of the tab **150** into the support member and also further act to retain the tab **150** within the support member.

[0045] As best shown in **FIGS. 4-6B**, a gap **154** is formed on the end mounting plate **146** such that a portion of the second hanger bar member **160** can slide beyond the attachment structure **144** when the hanger bar assembly **102** is in a retracted position. The free end of the tab **150** includes wedge-shaped serrations **152** for driving into a wooden joist. However, a variety of other fasteners may also be used.

[0046] A second hanger bar member **160** nests with the first hanger bar member **120** and includes a first end **162** with chamfered corners **164** similar to the chamfered corners **126** of the first hanger bar member **120**. First, second, and third retaining projections **166**, **167**, and **168** are provided near the first end **162** of the second hanger bar member **160**. The retaining projections **166**, **167** and **168** may be cut from the surface of the second hanger bar member **160** and unfolded to provide the form illustrated in **FIG. 2**. Alternatively, the retaining projections **166**, **167** and **168** may be separately formed then attached to the surface of the second hanger bar member **160**.

[0047] The retaining projections **166**, **167** and **168** are received within the first and/or second slot portions **131** and **133** of the first hanger bar member **120** in order to couple the hanger members **120** and **160** together in a longitudinally adjustable manner. The head of each retaining projection is greater in width than the first width **132** of the slot portions **131** and **133**, but is smaller than the second width **134**. As best illustrated in **FIG. 4**, the retaining projections **166**, **167** and **168** are dimensioned so as to pass freely under the first and second reinforcing bridges **140** and **142** as the first and second hanger bar members **120** and **160** are longitudinally moved relative to each other.

[0048] A second score line **170** may be provided across the width of the second hanger bar member **160**. As with the first score line **138**, the precise form and depth may vary widely according to the material strength and thickness of the hanger bar members. For example, the second score line **170** may be a straight line formed to a depth of approximately 0.02 inches. Since second hanger bar member **160** is of a solid cross-section, unlike the slotted first hanger bar member **120**, it is more difficult to break along the second score line **170**. Therefore, an optional score window or aperture **172** may be provided in the area of the score line **170** in order to facilitate breakage of the second hanger bar member. Additional score lines may be provided on the first and second hanger bar members **120** and **160**, thereby allowing the hanger bar members **120** and **160** to break off at varying lengths for accommodating plaster plates **110** of varying size.

[0049] In the event that it becomes necessary to fit the hanger bar assembly 102 into a relatively narrow space, the second hanger bar member 160 may be broken along the second score line 170. As shown in FIG. 2, breaking the second hanger bar member 160 along the second score line 170 removes the end of the hanger bar 160 having the retaining projections 166, 167 and 168. However, the first and second hanger bar members 120 and 160 are still adequately retained by the attachment tabs 112 formed on the plaster plate 110, as shown in FIG. 7. It is also possible to simply bend the first and second hanger bar members 120 and 160 as necessary to fit the hanger bar assembly into a narrow space.

[0050] Another attachment structure 144 is provided at the second end 164 of the second hanger bar member 160. As with the first hanger bar member 120, the attachment structure 144 can be of any suitable form. In one form, the attachment structure 144 disposed at the second end 164 has the same construction as the first attachment structure located at the second end 124 of the first hanger bar member 120. The elements of such an attachment structure 144 have been previously described in connection with the description of first hanger bar member 120. However, in the embodiment illustrated here, a gap 154 is formed on the end mounting plate 146 such that a portion of the first hanger bar member 120 can slide beyond the attachment structure 144 when the hanger bar assembly 102 is in a retracted position.

[0051] As mentioned above, the first and second hanger bar members 120 and 160 are secured together in a nested manner. In this regard, the first hanger bar member 120 has a first surface 121 that faces the second hanger bar 160 when assembled, and a second opposing surface 123. The second hanger bar member 160 includes a third surface 161 which faces away from the first hanger bar 120 when assembled, and a fourth surface 163 which faces the first hanger bar 120. When the first and second hanger bar members 120 and 160 are connected, the first and fourth surfaces 121 and 163 are received within each other in a nesting relationship. The second surface 123 faces outwardly (e.g., away from the suspended member 106) and the third surface 161 faces inwardly (e.g., toward the suspended member 106).

[0052] As previously noted, the retaining projections 166, 167 and 168 may pass freely through the second width 134 without interference. The larger second width areas 134 facilitate the assembly of the first and second hanger bar members 120 and 160. For example, in one method of assembly, the first end 122 of the first hanger bar member 120 is inserted through the gap 154 formed between the fourth surface 163 and end mounting plate 146 of the second hanger bar member 160. The first hanger bar member 120 is then slid longitudinally until at least the second width 134 portion formed on the second bridge 142 has cleared the third retaining projection 168.

[0053] The first hanger bar member 120 is then urged toward the second hanger bar member 160 until the first surface 121 of the first hanger bar member 120 is adjacent the fourth surface 163 of the second hanger bar member 160. The third retaining projection 168 is first passed through the second width 134 near the second reinforcing bridge 142. The second hanger bar 160 is then moved back relative to the first hanger bar member 120 in the direction of the first end 122.

[0054] The third retaining projection 168 travels in the first width 132 of the second slot portion 133. The second and first retaining projections 167 and 166 are then inserted through the second width 134 near the second reinforcing bridge 142. As the second hanger bar member 160 is moved toward the first end 122, the second and first retaining projections 167 and 166 subsequently engage the first width portion 132 of the second slot portion 133, thereby securing the first and second hanger bar members 120 and 160.

[0055] Once the first and second hanger bar members 120 and 160 are connected, the resulting hanger bar assembly 102 is freely adjustable in a lengthwise, or longitudinal, direction. The hanger bar assembly 102 is shown in its fully extended position in FIGS. 3 and 8. FIG. 3 also shows a plaster plate 110 slidably attached to the hanger bar assembly 102 by attachment tabs 112 which are configured to slidably receive and maintain the first and second hanger bar members 120 and 160 adjacent each other.

[0056] One advantage of the illustrated configuration is that, as the first and second hanger bar members 120 and 160 are moved relative to each other, at least two of the retaining projections 166, 167 and 168 are engaged within one of the elongated slot portions 131 and 133. (One exception to this mode of operation occurs when both the first and second projections 166 and 167, or all of the projections, have been passed through the second width 134 of slot portion 133 proximate the second reinforcing bridge 142.) As illustrated in FIG. 4, this capability is provided by arranging the retaining projections 166, 167 and 168 with a predetermined spacing S_1 between adjacent projections. The projection spacing S_1 is preferably at least slightly larger than the distance S_2 between the first width regions 132 of the first and second slot portions 131 and 133, which are separated by the first reinforcing bridge 140.

[0057] As illustrated in FIG. 5, a retaining tab 135 is disposed on the first hanger bar member 120 near the attachment structure 144 on the second end 124. The retaining tab 135 extends outwardly and downwardly from the first hanger bar member 120 opposite the second bridge 142. The retaining tab 135 slidably engages the first end 162 of the second hanger bar member 160 as the first retaining projection 166 passes out of the second slot portion 133 of the first hanger bar member 120. In this way, the retaining tab 135 maintains the first and second hanger bar members 120 and 160 adjacent to each other as the hanger bar assembly 102 is partially retracted.

[0058] FIGS. 6A and 6B show the attachment portions 144 of the engaged hanger bar members being slid toward each other. In FIG. 6A, both the first and second retaining projections 166 and 167 have exited the second slot portion 133, and the first end 162 of the second hanger bar member 160 has been extended beyond the attachment structure 144 of the first hanger bar member 120. In this position, the third retaining projection 168 remains within the second slot portion 133, thereby maintaining the first and second hanger bar members 120 and 160 adjacent one another, as best shown in FIG. 6B. FIG. 6B also shows that the gap 154 formed on the attachment structure 144 as it accommodates passage of the retaining projection 166 and thereby permits the first end 162 of the second hanger bar member to extend beyond the attachment structure 144. Similarly, the attach-

ment structure 144 of the second hanger bar member 160 also allows the first end 122 of the first hanger bar member 120 to extend therebeyond.

[0059] FIG. 7 shows the hanger bar assembly 102 in a retracted position wherein the front ends 122 and 162 of the first and second hanger bar members 120 and 160, respectively, extend beyond the attachment structure 144 of the other hanger bar member. As well, the first and second score lines 138 and 170 also extend beyond the attachment structures 144 such that portions of each hanger bar member 120 and 160 can be removed while the hanger bar members 120 and 160 are still adjacent each other. This permits the overall length of the hanger bar assembly 102 to be reduced without having to remove the hanger bar assembly 102 from the plaster frame 110. Once the retaining projections 166, 167 and 168 have been removed from the second hanger bar member 160, the first and second hanger bar members 120 and 160 are held adjacent one another by the opposed attachment tabs 112 on the plaster frame 110.

[0060] The cross-sectional details of the hanger bar assembly according to the present invention are best illustrated in FIGS. 9-12, which are taken along the section lines shown in FIG. 8. FIG. 9 shows the first and second hanger bar members 120 and 160 in a nested relationship. As previously described and illustrated in FIG. 2, the first hanger bar member 120 has a first surface 121 and a second surface 123. The first surface 121 has a generally concave groove 127 disposed along a substantial portion of the longitudinal length of the first hanger bar member 120. The second surface 123 has a generally convex ridge 129 corresponding to the concave groove 127 formed on the first surface 121. The third surface 161 of the second hanger bar member 160 has a generally concave groove 167 extending along a substantial portion of longitudinal length of the second hanger bar member 160. The second hanger bar member 160 further has a generally convex ridge 169 disposed on the fourth surface 163 corresponding to the concave groove 127. As illustrated in FIG. 9, the generally convex ridge 169 is received in the generally concave groove 127 in a nested manner.

[0061] FIG. 9 is a cross-sectional view of the first hanger bar member 120 showing the first width 32 of the elongated slot 130. FIG. 11 is a cross-sectional view of the first hanger bar member 120 showing the second width 134 of the elongated slot 130 and just prior to a reinforcing formation. FIG. 12 is cross-sectional view of the first hanger bar member 120 showing a reinforcing formation in an area that does not include any elongated slot 130.

[0062] The first and second reinforcing formations 140 and 142 each have a generally concave reinforcing depression 143 disposed along first surface 121 and a generally convex reinforcing protrusion 145 or ridge formed along the second surface 123. As illustrated for example in FIG. 11, the generally concave groove 127 that extends along a substantial portion of the first hanger bar member 120 defines a first plane P_1 . By comparison, the generally concave reinforcing depressions 143 extend beyond the plane P_1 and are therefore formed deeper into the first hanger bar member 120. Similarly, the generally convex ridge 129 that extends along a substantial portion of the longitudinal length of the first hanger bar member 120 defines a second plane P_2 . The reinforcing depression 143 extends beyond

plane P_2 so as to project from the surface of the first hanger bar member 120 and thereby allow passage of retaining projections 166, 167 and 168 therethrough.

[0063] Various embodiments of the present invention may also include a securing arrangement such as the one illustrated in FIG. 13. The securing arrangement for the hanger bar system fixes the position of the first and second hanger bar members 120 and 160 to each other, as well as fixes the position of the hanger bar assemblies 102 relative to the suspended member. As shown in FIG. 13, the plaster plate 110 includes attachment tabs 112 that retain the first and second hanger bars 120 and 160. A securing fastener 180, such as a threaded screw, is received in a guide flange member 182. An aperture 184 is provided in the plaster plate 110 to provide access to the securing fastener 180.

[0064] As the securing fastener 180 is tightened, it comes into contact with a surface of the second hanger bar member 160. As a result of this contact, the first and second hanger bars 120 and 160 come into firmer engagement with each other as well as with the attachment tabs 112. Therefore, this increased contact pressure prevents both the first and second hanger bar members 120 and 160 from moving relative to each other and the hanger bar members 120 and 160 from moving relative to the attachment tabs 112 and the plaster plate 110.

[0065] Although various preferred embodiments have been discussed here, numerous other embodiments of the present invention are envisioned. For example, the first hanger bar member 120 may include more than one reinforcing bridge 140 spanning the elongated slot 130, with more than two slot portions will exist. Similarly, as few as two retaining projections may be disposed on the second hanger bar member 160. In yet another variation, the gap 154 may be removed from the attached structures 144 where the structures do not extend far enough down so as to impede the passage of the front end of either bar member 120, 160 or the retaining projections.

[0066] It should be emphasized that the embodiments described above, and particularly any "preferred" embodiments, are merely examples of various implementations that have been set forth here to provide a clear understanding of various aspects of the invention. One of ordinary skill will be able to alter many of these embodiments without substantially departing from scope of protection defined solely by the proper construction of the following claims.

What is claimed is:

1. A hanger bar assembly for a recessed luminaire comprising:

a first hanger bar member having an elongated slot; and
a second hanger bar member, adjacent to the first hanger bar member, having at least three retaining projections extending into the elongated slot, for slidably engaging the first hanger bar member.

2. The hanger bar assembly of claim 1, further comprising at least one bridge spanning the elongated slot to form a first slot portion and a second slot portion, wherein adjacent retaining projections are separated by a distance that is greater than a width of the bridge.

3. The hanger bar assembly of claim 2, further comprising a second bridge disposed on a proximal end of the first hanger bar and spanning an end of the elongated slot,

wherein the retaining projections slide beneath the second bridge and out of the elongated slot.

4. The hanger bar assembly of claim 3, wherein the first hanger bar member further includes a retaining tab disposed adjacent and opposite the second bridge, for slidably engaging the second hanger bar member as the retaining projections exit the elongated slot, thereby maintaining the second hanger bar member adjacent the first hanger bar member.

5. The hanger bar assembly of claim 3, further comprising a first attachment structure disposed on the first hanger bar member and a second attachment structure disposed on the second hanger bar member, wherein the first and second attachment structures are configured to allow the first and second hanger bar members to slidably extend therebeyond, respectively.

6. The hanger bar assembly of claim 5, further comprising:

a first score line disposed on the first hanger bar member between the bridge and a distal end, the first score line intersecting the elongated slot;

a second score line disposed on the second hanger bar member between a proximal end of the second hanger bar member and the retaining projections; and

wherein the first score line extends beyond the second attachment member and the second score line extends beyond the first attachment member when the hanger bar assembly is in a fully retracted position.

7. The hanger bar assembly of claim 6, wherein the second hanger bar member further includes a score aperture extending therethrough, the score aperture intersecting the second score line.

8. The hanger bar assembly of claim 5, wherein the first and second attachment members each include an integral mounting tab and a mounting aperture.

9. The hanger bar assembly of claim 1, further comprising a suspended member including a plurality of opposed attachment tabs for slidably engaging the first and second hanger bar members.

10. The hanger bar assembly of claim 9, wherein the suspended member includes a securing arrangement for locking the first hanger bar member, the second hanger bar member, and the suspended member in position relative to each other.

11. A hanger bar assembly comprising:

a first hanger bar member having an elongated slot and a bridge, the bridge spanning the elongated slot;

a second hanger bar member adjacent the first hanger bar member, the second hanger bar member including a plurality of retaining projections extending into the elongated slot and slidably engaging the first hanger bar member; and

wherein the retaining projections slide beneath the bridge.

12. The hanger bar assembly of claim 11, wherein the bridge is disposed between a first end and a second end of the elongated slot thereby forming a first slot portion and a second slot portion separated by a first distance, adjacent of the retaining projections being separated by a second distance greater than the first distance.

13. The hanger bar assembly of claim 11, wherein the bridge is disposed on a proximal end of the first hanger bar

member and the retaining projections slide beneath the bridge and out of the elongated slot.

14. The hanger bar assembly of claim 13, wherein the first hanger bar member further includes a retaining tab disposed adjacent and opposite the bridge, the retaining tab slidably engaging the second hanger bar member as the retaining projections exit the elongated slot, thereby maintaining the second hanger bar member adjacent the first hanger bar member.

15. The hanger bar assembly of claim 11, further comprising:

a first score line disposed on the first hanger bar member between the bridge and a distal end, the first score line intersecting the elongated slot;

a second score line disposed on the second hanger bar member between a proximal end and the retaining projections; and

wherein the first score line extends beyond a second attachment member disposed on the second hanger bar member and the second score line extends beyond a first attachment member disposed on the first hanger bar member when the hanger assembly is in a fully retracted position.

16. The hanger bar assembly of claim 15, wherein the first and second attachment members each include an integral mounting tab and a mounting aperture.

17. A luminaire, comprising:

a first hanger bar member having an elongated slot;

a second hanger bar member adjacent said first hanger bar member;

means for retaining the second hanger bar member adjacent the first hanger bar member, the means for retaining extending into the elongated slot and slidably engaging the first hanger bar member;

means for attaching the first and the second hanger bar members to a respective support structure, the means for attaching being disposed on a proximal end of each of the first and second hanger bar members; and

means, supported by the first and second hanger bars, for providing illumination.

18. The luminaire of claim 17, further comprising at least one bridge spanning the elongated slot, thereby forming at least a first slot portion and a second slot portion separated by a first distance, adjacent of the means for retaining being separated by a second distance, the second distance being greater than the first distance, and wherein the means for retaining slide beneath the at least one bridge.

19. The luminaire of claim 18, wherein the at least one bridge further comprises a second bridge disposed on a proximal end of the first hanger bar member, wherein the means for retaining slide beneath the second bridge and out of the elongated slot.

20. A method of assembling a hanger bar assembly, comprising the steps of:

slidably engaging a first hanger bar member including a first proximal end and a first distal end with a second hanger bar member including a second distal end and a second proximal end such that the first and second hanger bar members are adjacent;

sliding the first and second hanger bar members relative to each other such that the first distal end extends beyond the second proximal end and the second distal end extends beyond the first proximal end; and

removing an unwanted portion from each of the first and second distal ends, wherein the first and second proxi-

mal ends are configured for attachment to an adjacent support member.

21. The method of claim 20, further comprising the step of maintaining the first and second hanger bar members adjacent each other during the removing step.

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