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(54) **ADJUSTABLE LIGHT MECHANISM FOR A MERCHANDISER**

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A47F 11/10	(2006.01)
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(58) **Field of Classification Search**

CPC F21V 14/02; F21V 19/002; F21V 21/34; F21V 33/006; A47F 11/10; F21Y 2103/10; F21Y 2115/10; F21W 2131/305; F21W 2131/405

See application file for complete search history.

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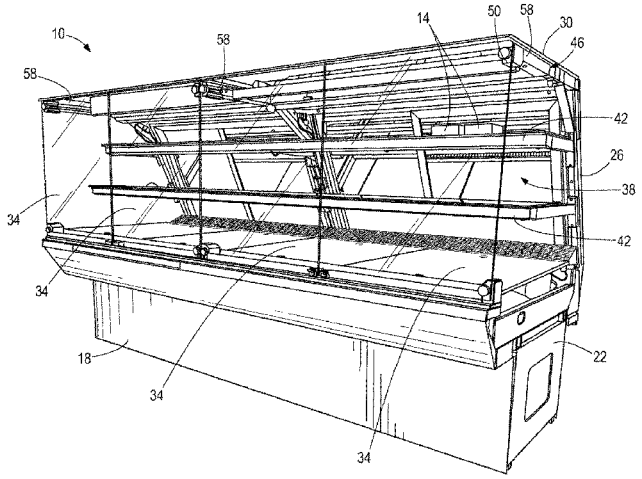
(57) **ABSTRACT**

A merchandiser including a case that defines a product display area and a luminaire that is coupled to the case to illuminate at least a portion of the product display area. The luminaire is slidably and rotatably coupled to the case at a single point.

20 Claims, 5 Drawing Sheets



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F21Y 103/10 (2016.01)
F21Y 115/10 (2016.01)

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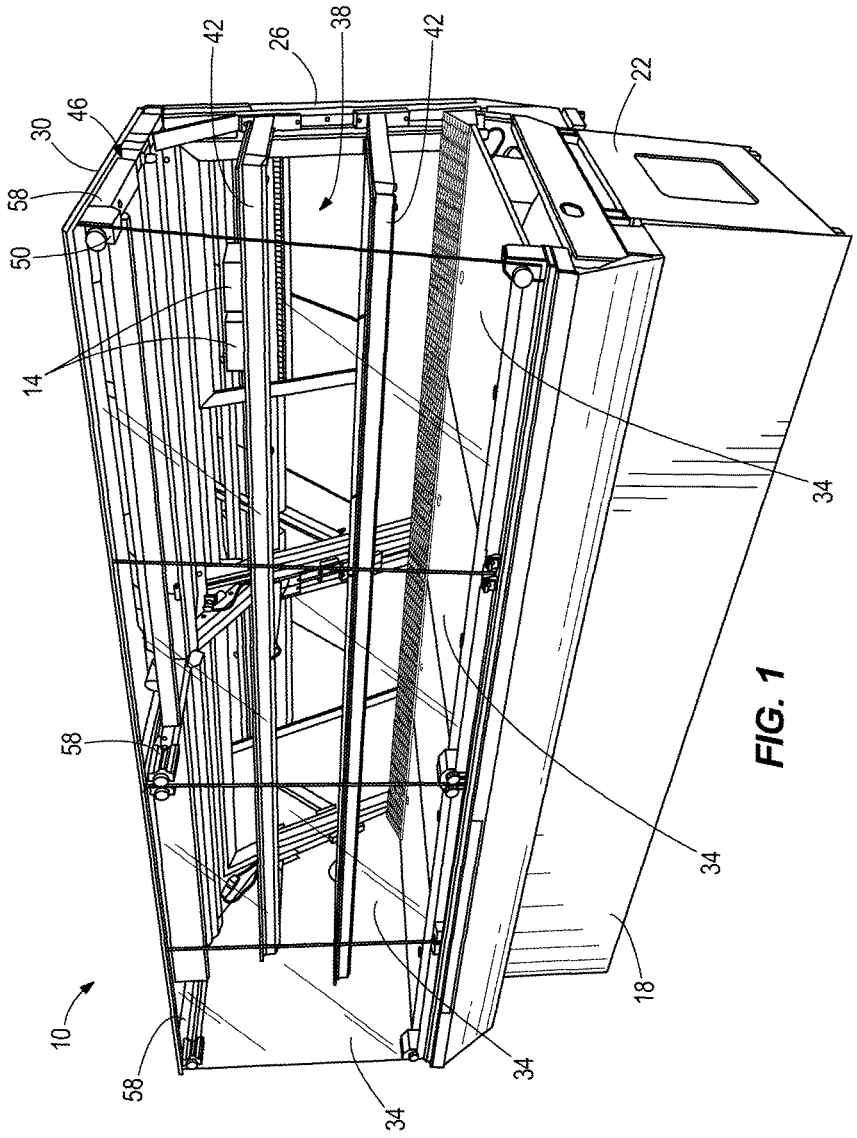

FIG. 1

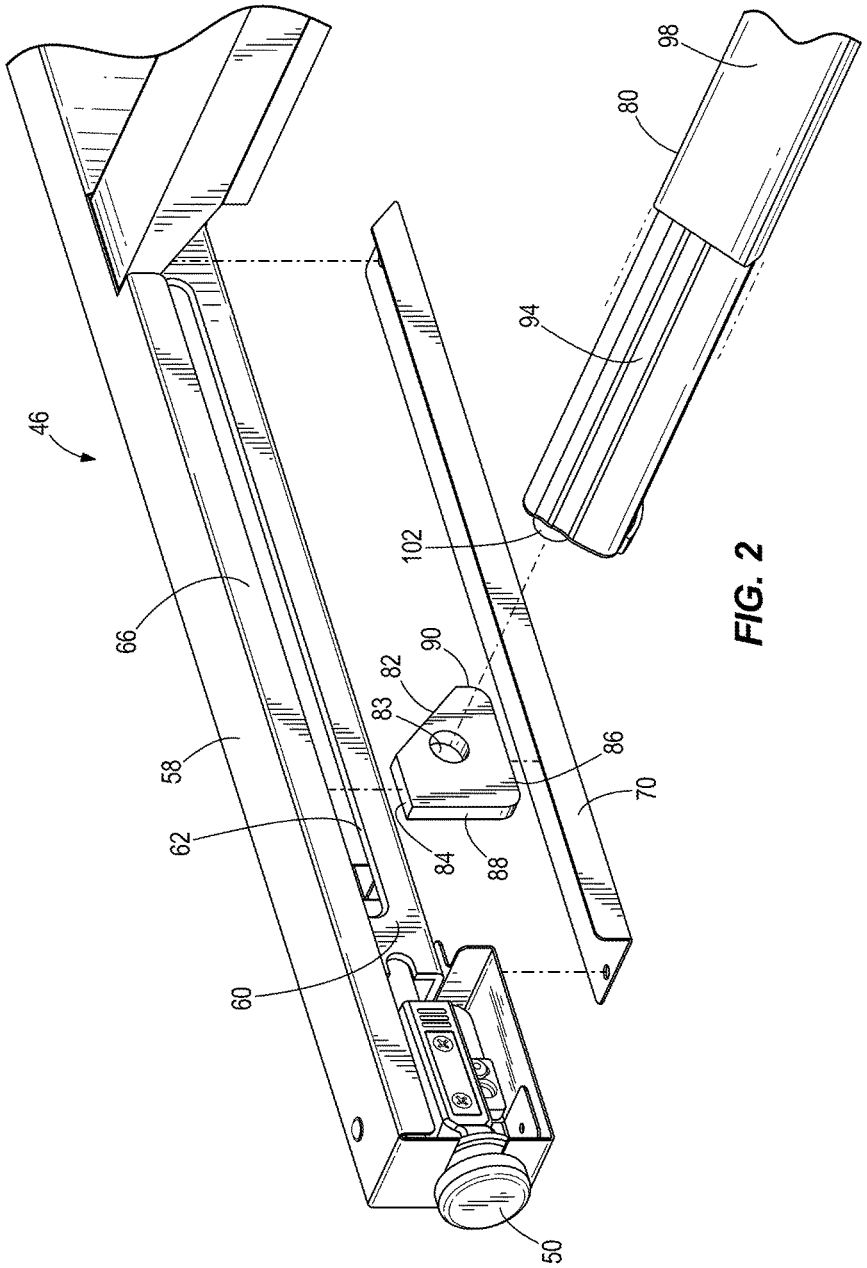

FIG. 2

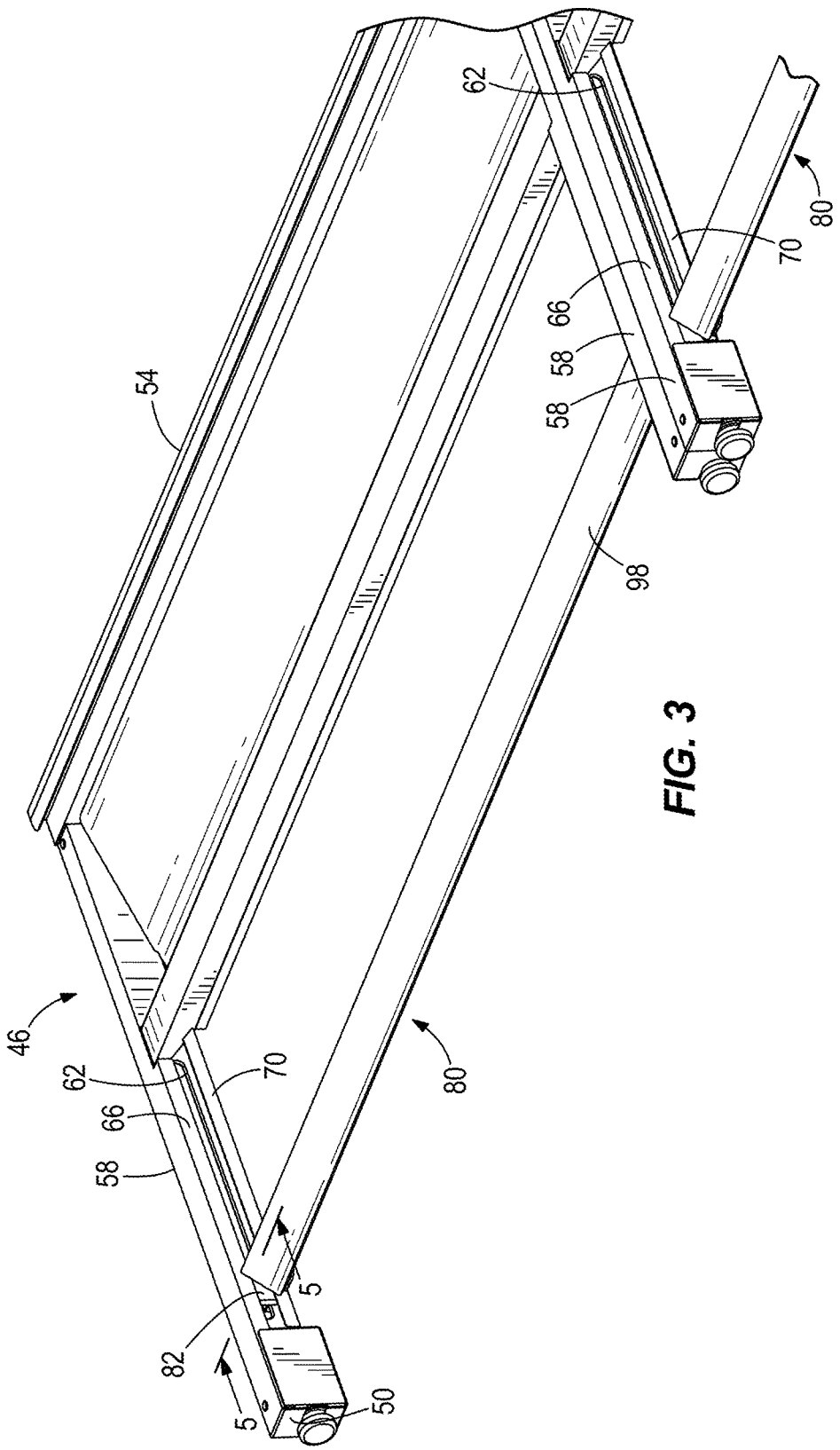

FIG. 3

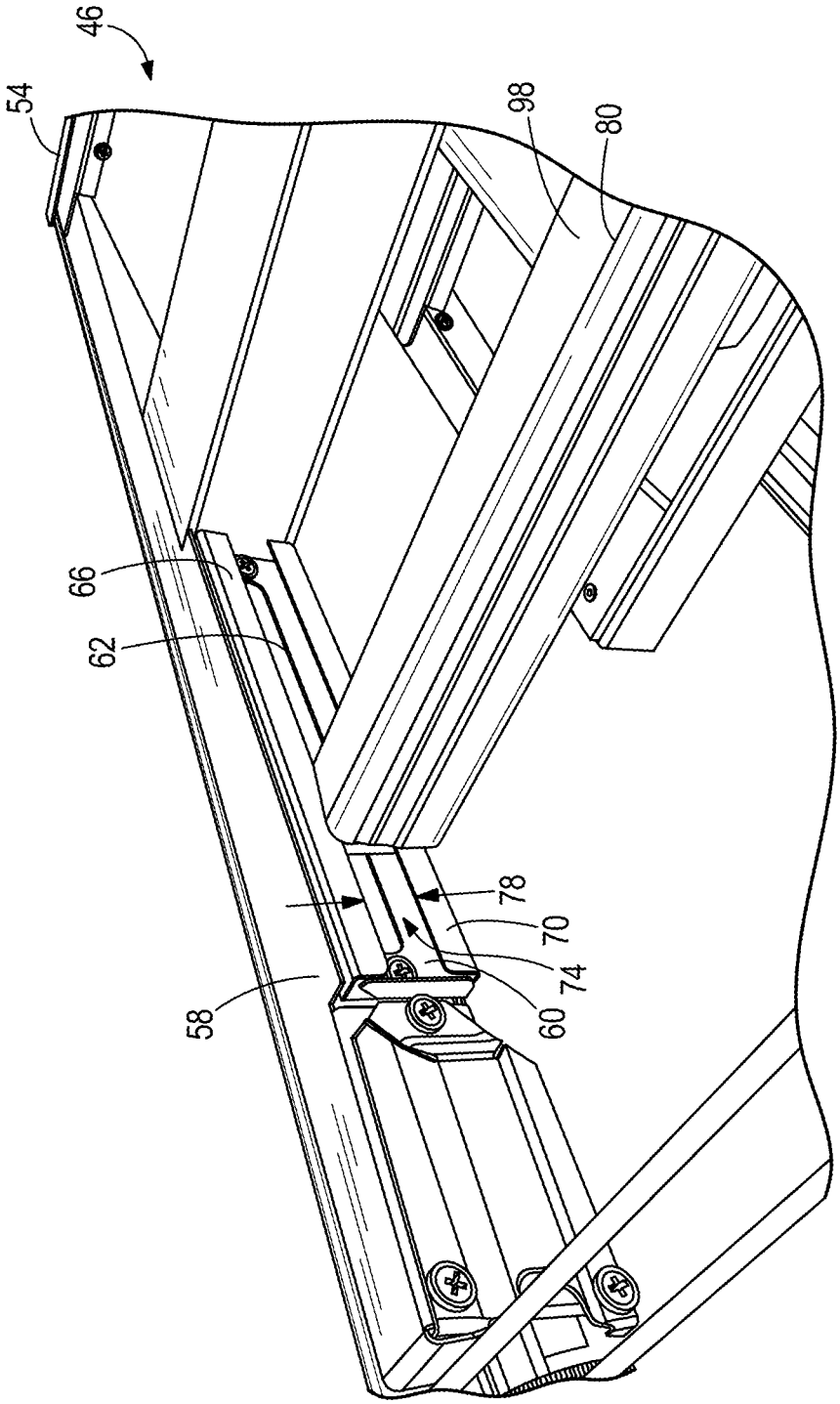

FIG. 4

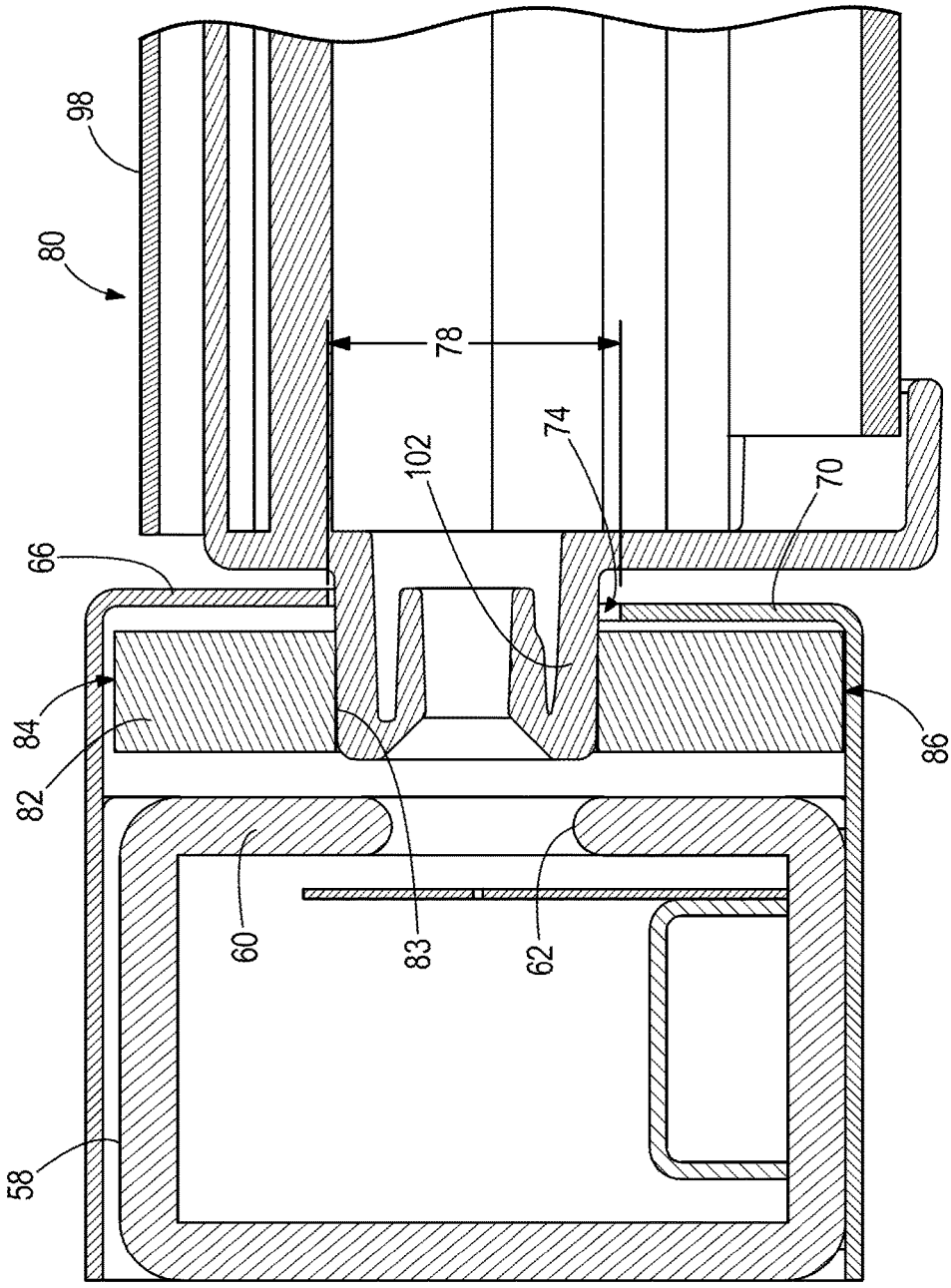

FIG. 5

ADJUSTABLE LIGHT MECHANISM FOR A MERCHANDISER

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority to U.S. Provisional Application No. 61/940,230, filed on Feb. 14, 2014, the entire contents of which are incorporated herein by reference.

BACKGROUND

The present invention relates to a light mechanism, and more particularly to an adjustable light mechanism for use in a refrigerated merchandiser.

Existing refrigerated merchandisers include a case that defines a product display area for supporting and displaying food product. Refrigerated merchandisers also typically include one or more luminaires that are attached to the case to provide illumination for the product display area.

SUMMARY

The invention provides a merchandiser including a case that defines a product display area and a luminaire that is coupled to the case to illuminate at least a portion of the product display area. The luminaire is slidably and rotatably coupled to the case at a single point.

In another construction, the invention provides a merchandiser including a case that defines a product display area and that includes a frame. The merchandiser also includes an attachment mechanism that is coupled the frame and slidable along a direction between a rear of the case and a front of the case, and a luminaire that is rotatably coupled to the attachment mechanism to illuminate at least a portion of the product display area. A position of the luminaire within the case is adjustable by translation of the attachment mechanism or rotation of the luminaire relative to the attachment mechanism.

In another construction, the invention provides a merchandiser including a case that defines a product display area and that includes a frame. The merchandiser also includes a luminaire that is coupled to the case to illuminate at least a portion of the product display area, and an adjustable attachment mechanism that is defined by a one-piece element coupled to the luminaire to slidably and rotatably attach the luminaire to the frame.

Other aspects of the invention will become apparent by consideration of the detailed description and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a merchandiser embodying the present invention and including a canopy.

FIG. **2** is an exploded perspective view of a portion of the canopy.

FIG. **3** is a perspective view of a portion of the canopy.

FIG. **4** is an enlarged perspective view of a portion of the canopy.

FIG. **5** is a cross-section view taken along lines **5-5** in FIG. **3**.

Before any constructions of the invention are explained in detail, it is to be understood that the invention is not limited in its application to the details of construction and the arrangement of components set forth in the following description or illustrated in the following drawings.

DETAILED DESCRIPTION

FIG. **1** shows a refrigerated merchandiser **10** that may be located in a supermarket or a convenience store (not shown) for presenting fresh food, beverages, and other food product **14** (illustrated schematically) to consumers. The illustrated merchandiser **10** is an upright merchandiser, although other types of merchandisers (e.g., horizontal merchandisers, etc.) fall within the scope of the invention. The merchandiser **10** includes a case **18** that has a base **22**, a rear wall **26**, a canopy **30**, and a plurality of front glass panels **34**. The panels **34** are supported by the case **18**. The area partially enclosed by the base **22**, the rear wall **26**, the canopy **30**, and the panels **34** defines a product display area **38** that supports the food product **14** in the case **18**. The food product **14** is displayed on racks or shelves **42** extending forwardly from the rear wall **26**, and is accessible by consumers (e.g., when the glass panels **34** are moved or removed).

With reference to FIGS. **1-3**, the canopy **30** includes a frame **46** that has a front edge **50**, a rear edge **54** and frame members **58** that extend from the back edge **54** toward the front edges **50** in a direction perpendicular to the rear edge **54**. As illustrated in FIG. **3**, the frame includes four frame members **58**, with two frame members **58** positioned on lateral sides of the canopy **30** and two frame members coupled to each other adjacent a lateral center of the canopy **30**. It will be appreciated that the frame **46** can include different quantities and arrangements of frame members **58**. Referring to FIGS. **2-5**, each frame member **58** includes an interior-facing wall **60** that has an elongate opening **62** (e.g., a slot) extending longitudinally along the wall **60** (between the front and back edges **50**, **54**).

With reference to FIGS. **2** and **3**, the frame member **58** has a first flange **66** and a second flange **70** is coupled to the frame member **58** such that the flanges **66**, **70** cooperatively define a channel **74** when the flange **70** is attached to the frame member **58**. The flange **70** also encloses a bottom side of the frame member **58** (see FIG. **5**). As illustrated in FIGS. **4** and **5**, a gap **78** is defined between opposite edges of the flanges **66**, **70** (the edges facing each other). The gap **78** communicates with the channel **74** (i.e. provides access to the channel **74**) and is aligned with the opening **62**.

With reference to FIGS. **2-5**, the merchandiser **10** also includes light assemblies or luminaires **80** that are adjustably coupled to the case **18** by attachment elements or attachment mechanisms or sliders **82** (described as "attachment elements" for purposes of description). As illustrated in FIGS. **2** and **5**, the illustrated attachment mechanism **82** is defined by a square-truncated body that has a central hole **83**, an upper surface **84**, a lower surface **86**, a forward surface **88**, and an angular, rearward-facing surface **90**. The hole **83** can be a through hole or blind a recess. As shown in FIG. **5**, the upper surface **84** is slidable along the interior of the first flange **66**, and the lower surface **86** is slidable along the interior of the second flange **70**.

FIGS. **3** and **5** illustrate that the attachment mechanism **82** is disposed within the channel **74** between the flanges **66**, **70** and the wall **60**. The attachment mechanisms **82** are movable within their respective channels **74** linearly along the channel **74** (i.e. in a direction along the frame member **58** between the front edge **50** and the rear edge **54**. The height of the attachment mechanism **82** (the distance between upper and lower surfaces **84**, **86**) is larger than the gap **78** such that the attachment mechanism **82** is restrained or

encapsulated by the flanges **66**, **70** and held in the channel **74**. The forward surface **88** cooperates with a forward portion of the frame member **58** to limit further forward movement of the attachment mechanism **82**, and the rearward surface **90** cooperates with a rearward portion of the frame member **58** to limit further rearward movement of the attachment mechanism **82** when adjusting the linear position of the luminaire **80** relative to the frame **46**. The truncated shape of the attachment mechanism **82** reduces the surface area of the upper surface **84** to facilitate movement of the mechanism **82** within the channel **74**.

With reference to FIG. **2**, each luminaire **80** includes one or more light sources **94** (e.g., fluorescent, LED, etc.) that emit light to illuminate the product display area **38**. Each luminaire **80** has a translucent or transparent cover **98** and a light source **110**. The luminaire **80** is positioned between two frame members **58** and includes a protrusion or projection **102** that is shaped to fit into the hole **83** to attach the luminaire **80** to the case **18**. The projection **102** is cylindrical and matches the cross-sectional shape of the hole **83** so that the luminaire **80** can rotate or pivot relative to the frame **46**. As will be appreciated, the hole **83** and/or the projection **102** can be lubricated or can include one or more bearings to facilitate movement of the luminaire **80** relative to the attachment mechanism **82**. In another example, the projection **102** can be fixed within the hole **83** and the luminaire **80** can be rotatably coupled to the projection **102** (e.g., via bearings). In addition, it will be appreciated that the hole-projection attachment can be reversed such that the hole or recess is defined on the ends of the luminaire **80** and the projection is defined by the attachment mechanism **82**.

The attachment mechanism **82** is sandwiched between the first and second flanges **66**, **70** during assembly of the second flange **70** to the frame **46**, and the luminaire **80** is attached to the attachment mechanism **82** by inserting the projection **102** into the hole **83**. For example, the luminaire **80** can be attached to the attachment mechanism **82** and this sub-assembly can be coupled to the frame **46** within the channel **74**. In one variation of the assembly, the luminaire **80** can be attached to the attachment mechanism **82** after the attachment mechanism **82** is coupled to the frame **46** within the channel **74**.

When the attachment mechanism **82** is positioned within the channel **74**, the hole **83** is generally aligned with the elongate opening **62** and the gap **78** to form a passage into which the projection **102** at least partially extends (the amount of extension depends on the length of the projection **102**). As illustrated in FIG. **5**, linear translation of the luminaire **80**, via sliding the attachment mechanism **82** within the channel **74**, is limited by the length of the channel **74**. In examples where the projection **102** extends into the elongate opening **62**, the sliding distance is limited by whichever of the elongate opening **62** or the channel **74** that defines a forward or rearward stop for the attachment mechanism **82** or the projection **102**.

The illustrated attachment mechanism **82** is a single or one-piece element (e.g., a rigid element) that permits rotation and translation of the luminaire **80** relative to the frame **46**. The connection between the projection **102** and the attachment mechanism **82** permits at least 100 degrees of rotational movement (e.g., up to 360 degrees of rotation) of the luminaire **80** from a nominal position (e.g., with the primary light axis defined by the light source(s) oriented along a vertical plane) relative to the frame member **58**. the connection also provides sliding engagement or translational movement of the attachment mechanism **82** relative to the frame member **58** to permit linear adjustment of the position of the luminaire **80** (to accomplish different forward and rearward positions). For example, the luminaire **80** can be translationally repositioned approximately 4-12 inches fore and aft relative to a position of the luminaire adjacent a center of the channel **74**.

The translational and rotational attachment between the frame **46** and the luminaires **80** allows adjustment of the orientation luminaire **80** so that light emanating from the luminaire **80** can project onto a desired area (e.g., product in the product display area **38**, a region of the display area **38**, etc.) within the case **18**. No tools are necessary to facilitate adjustment of the position of the luminaire **80**. The luminaires **80** also can be easily removed for cleaning. While the invention has been described and illustrated in detail with regard to the luminaire **80** being slidably and pivotably coupled to a canopy frame member **58**, it will be appreciated that the luminaire **80** can be coupled to other case structure (e.g., shelves **42**) of the merchandiser **10**

Various features and advantages of the invention are set forth in the following claims.

The invention claimed is:

1. A merchandiser comprising:

a case defining a product display area; and

a luminaire coupled to the case and including a light source configured to illuminate at least a portion of the product display area,

wherein the luminaire is slidably and rotatably coupled to the case at a single point, and

wherein the luminaire is slidably and rotatably adjustable to different positions relative to the case while remaining attached to the case.

2. The merchandiser of claim **1**, wherein the case includes a canopy having frame members, and wherein the luminaire is slidably and rotatably coupled to the frame members.

3. The merchandiser of claim **2**, wherein each of the frame members defines a channel, and wherein the luminaire is coupled to the frame members within each channel.

4. The merchandiser of claim **2**, further comprising an attachment mechanism disposed within each channel, and wherein ends of the luminaire are coupled to the respective attachment mechanisms.

5. The merchandiser of claim **4**, wherein the attachment mechanism is slidable along the channel and the luminaire is rotatable relative to the attachment mechanism.

6. The merchandiser of claim **5**, wherein the attachment mechanism includes a hole and the luminaire includes a projection engaged with the attachment mechanism within the hole.

7. The merchandiser of claim **1**, wherein the luminaire includes light emitting diodes.

8. A merchandiser comprising:

a case defining a product display area and including a frame;

an attachment mechanism coupled to the frame and slidable along a direction between a rear of the case and a front of the case; and

a luminaire rotatably coupled to the attachment mechanism and including a light source configured to illuminate at least a portion of the product display area,

wherein a position of the luminaire within the case is adjustable by translation of the attachment mechanism or rotation of the luminaire relative to the attachment mechanism, and

wherein the luminaire is slidably and rotatably adjustable to different positions relative to the case while remaining attached to the case.

9. The merchandiser of claim 8, wherein the luminaire includes a first end and a second end, wherein the attachment mechanism is a first attachment mechanism that is coupled to the first end, and wherein the merchandiser further comprises a second attachment mechanism that is coupled to the second end.

10. The merchandiser of claim 8, wherein a portion of the frame defines a support of a canopy or a shelf, and wherein the attachment mechanism is encapsulated by a frame portion.

11. The merchandiser of claim 10, wherein the frame portion has a channel and the attachment mechanism is disposed in and movable within the channel.

12. The merchandiser of claim 11, wherein the luminaire has an end extending through a side of the frame portion into the channel.

13. The merchandiser of claim 12, wherein the attachment mechanism has one of a recess or a projection and the luminaire has the other of the recess or the projection, and wherein the projection is rotatable within the recess.

14. The merchandiser of claim 8, wherein the luminaire is rotatable at least 100 degrees relative to a nominal position of the luminaire in which a primary light axis of the luminaire is oriented along a vertical plane.

15. A merchandiser comprising:

a case defining a product display area and having a frame;

a luminaire coupled to the case and including a light source configured to illuminate at least a portion of the product display area; and

an adjustable attachment mechanism defined by a one-piece element coupled to the luminaire to slidably and rotatably attach the luminaire to the frame, and

wherein the luminaire is slidably and rotatably adjustable to different positions relative to the case via the attachment mechanism while remaining attached to the case.

16. The merchandiser of claim 15, wherein the frame has a frame member defining a channel, and wherein the attachment mechanism is disposed in and translational within the channel.

17. The merchandiser of claim 16, wherein an end of the luminaire is rotatably coupled to the attachment mechanism.

18. The merchandiser of claim 17, wherein the attachment mechanism includes a hole and the luminaire includes a projection engaged with the attachment mechanism within the hole.

19. The merchandiser of claim 15, wherein the luminaire includes a first end and a second end, wherein the attachment mechanism is a first attachment mechanism that is coupled to the first end, and wherein the merchandiser further comprises a second attachment mechanism that is coupled to the second end.

20. The merchandiser of claim 15, wherein a portion of the frame defines a support of a canopy or a shelf, and wherein the attachment mechanism is encapsulated by a frame portion.

* * * * *