

ECLA EUROPEAN CLASSIFICATION

F21V DETAILS OF LIGHTING DEVICES, OF GENERAL APPLICATION

[N: **WARNING** [C0904]

1. The following IPC groups are not used in the internal ECLA classification system. Subject matter covered by these groups is classified in the following ECLA groups:

[F21V8/00](#) covered by [G02B6/00L](#)

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[N: **Notes**[N0904]

1. Groups [F21V1/00-F21V14/00](#) cover details of those parts involved in light emission or distribution. Groups [F21V15/00-F21V31/00](#) cover details of those parts not so involved.
2. Details of non-electric lighting devices or systems are classified in groups [F21V35/00-F21V37/00](#) only if a special adaptation related to the use of a non-electric light source is of interest.

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Note

In this subclass have been included only those lighting device details which were considered to be of a kind applicable to the lighting devices of more than one of the subclasses F21L, F21M, F21P, F21Q, F21S. Inventions concerned with details of the kinds provided for are to be classified in this subclass, even though they are only stated to be applied to a device of a single subclass.

Guide heading: [Details of those parts involved in light emission or distribution \(optical elements and systems in general G02B\)](#)

F21V1/00 **Shades for light sources** [N: i.e. lampshades for table, floor, wall or ceiling lamps] [N1204]

- F21V1/02 . Frames
- F21V1/04 . . rigid ([F21V1/08](#) takes precedence)
- F21V1/06 . . foldable or collapsible
- F21V1/08 . . adjustable
- F21V1/10 . Rotating shades
- F21V1/12 . Composite shades [N: i.e. shades being made of distinct parts] [N1204]
- F21V1/14 . Covers for frames; Frameless shades
- F21V1/14C . . [N: The cover being attached to a supporting lampshade frame] [N1204]
- F21V1/14F . . [N: Frameless shades] [N1204]
- F21V1/16 . . characterised by the material
- F21V1/18 . . . the material being paper
- F21V1/20 . . . the material being glass
- F21V1/22 . . . the material being plastics

- F21V1/24 . . . the material being metal
- F21V1/26 . Manufacturing shades
- F21V3/00** **Globes; Bowls; Cover glasses** (with refracting properties [F21V5/00](#); with reflecting properties [F21V7/00](#))
- F21V3/00C . [N: being designed to facilitate cooling] [N1203]
- F21V3/02 . characterised by the shape
- F21V3/02F . . [N: Chinese lanterns; Balloons] [N1204]
- F21V3/02F2 . . . [N: being inflatable] [N1204]
- F21V3/04 . characterised by the material; characterised by surface treatments or coatings
- F21V3/04M . . [N: characterised by the material] [N1204]
- F21V3/04M2 . . . [N: the material being glass] [N1204]
- F21V3/04M2B [N: the material diffusing light, e.g. translucent glass] [N1204]
- F21V3/04M4 . . . [N: the material being plastics] [N1204]
- F21V3/04M4B [N: the material diffusing light, e.g. translucent plastics] [N1204]
- F21V3/04M8 . . . [N: comprising air or water bubbles, e.g. foamed materials] [N1204]
- F21V3/04M10 . . . [N: comprising fluorescent or light-storing materials] [N1204]
- F21V3/04S . . [N: Coatings] [N1204]
- F21V3/04S2 . . . [N: provided with fluorescent or light-storing materials] [N1204]
- F21V3/04T . . [N: Patterns or structured surfaces for diffusing light, e.g. frosted surfaces] [N1204]
- F21V5/00** **Refractors for light sources** [N: (for vehicle rear lights [F21S48/22T](#); for vehicle head lamps [F21S48/12T](#))] [C1202]
- F21V5/00C . [N: being designed to facilitate cooling] [N1203]
- F21V5/00H . [N: using micro-optical elements for redirecting or diffusing light] [N1204]
- F21V5/00H2 . . [N: using holograms] [N1204]
- F21V5/00H4 . . [N: using micro-lenses] [N1204]
- F21V5/00H6 . . [N: using micro-prisms] [N1204]
- F21V5/00L . [N: applied to portable lighting devices] [N0109]
- F21V5/00P . [N: Array of lenses or refractors for a cluster of light sources, e.g. for arrangement of multiple light sources in one plane (combination of two or more refractors [F21V5/00S](#))] [N1204]
- F21V5/00S . [N: Combination of two or more successive refractors along an optical axis] [N1204]
- F21V5/02 . of prismatic shape ([F21V5/04](#) takes precedence)
- F21V5/04 . of lens shape
- F21V5/04B . . [N: Ball lenses] [N1204]

- F21V5/04D . . [N: the lens having cylindrical faces, e.g. rod lenses, toric lenses] [N1204]
- F21V5/04F . . [N: the lens having discontinuous faces, e.g. Fresnel lenses] [N1204]
- F21V5/04R . . [N: the lens having a rotationally symmetrical shape about an axis for transmitting light in a direction mainly perpendicular to this axis, e.g. ring or annular lens with light source disposed inside the ring] [N0601]
- F21V5/04S . . [N: the lens being a simple lens adapted to cooperate with a point-like source for emitting mainly in one direction and having an axis coincident with the main light transmission direction, e.g. convergent or divergent lenses, plano-concave or plano-convex lenses] [N0601]

- F21V5/06 . Hanging lustres for chandeliers

- F21V5/08 . producing an asymmetric light distribution [C1008]

- F21V7/00** **Reflectors for light sources** [N: (for vehicle rear lights [F21S48/23](#); for vehicle head lamps [F21S48/13D](#))] [C1202]

- F21V7/00A . [N: providing for indirect lighting] [N9501]
- F21V7/00A1 . . [N: on lighting devices that also provide for direct lighting, e.g. by means of independent light sources, by splitting of the light beam, by switching between both lighting modes] [N9501]

- F21V7/00C . [N: Combination of two or more reflectors for a single light source (array of reflectors for a cluster of light sources [F21V7/00P](#))] [N1204] [C1207]
- F21V7/00C2 . . [N: with successive reflections from one reflector to the next or following] [N1204]
- F21V7/00C2D . . . [N: for avoiding direct view of the light source or to prevent dazzling] [N1204]

- F21V7/00E . [N: with an elongated shape to cooperate with linear light sources] [N1204]

- F21V7/00G . [N: adapted to cooperate with light sources of shapes different from point-like or linear, e.g. circular light sources] [N0109]

- F21V7/00H . [N: specially adapted to co operate with point like light sources; specially adapted to co operate with light sources the shape of which is unspecified ([F21V7/16](#) to [F21V7/22](#) take precedence)] [N0904]

- F21V7/00L . [N: for portable lighting devices] [N0109]

- F21V7/00P . [N: Array of reflectors for a cluster of light sources, e.g. arrangement of multiple light sources in one plane (combination of two or more reflectors [F21V7/00C](#))] [N1012]

- F21V7/00T . [N: using total internal reflection] [N1204]

- F21V7/04 . Optical design (F21V7/22 takes precedence) [N1204]
- F21V7/04C . . with conical or pyramidal surface [N1204]
- F21V7/04F . . with cylindrical surface [N1204]
- F21V7/04I . . with spherical surface [N1204]
- F21V7/04O . . with involute curvature [N1204]
- F21V7/04S . . with facets structure [N1204]
- F21V7/05 . . plane

- F21V7/06 . . with parabolic curvature
- F21V7/07 . . with hyperbolic curvature
- F21V7/08 . . with elliptical curvature
- F21V7/09 . . with a combination of different curvatures

- F21V7/10 . Construction (F21V7/22 takes precedence) [N1204]
- F21V7/16 . . with provision for adjusting the curvature
- F21V7/18 . . with provision for folding or collapsing
- F21V7/20 . . constructed to facilitate cooling, e.g. with fins (cooling by other means, e.g. fluid, [F21V29/00](#))

- F21V7/22 . characterised by the material; characterised by surface treatments or coatings

- F21V9/00** **Light filters** (coloured shades [F21V1/00](#)); **Selection of luminescent materials for light screens** (luminescent materials per se [C09K11/00](#); electroluminescent light sources [H05B33/00](#))

- F21V9/02 . for simulating daylight ([F21V9/04](#), [F21V9/06](#), [F21V9/16](#) take precedence)
- F21V9/04 . for filtering out infra-red radiation (using liquid-filled chambers [F21V9/12](#))
- F21V9/06 . for filtering out ultra-violet radiation ([F21V9/16](#) takes precedence)
- F21V9/08 . for producing coloured light, e.g. monochromatic; for reducing intensity of light ([F21V9/16](#) takes precedence)
- F21V9/08L . . [N: for portable lighting devices] [N0109]
- F21V9/10 . . with provision for variation of the colour or intensity ([F21V9/12](#) takes precedence)
- F21V9/12 . . with liquid-filled chambers

- F21V9/14 . for producing polarised light

- F21V9/16 . Selection of luminescent materials for screens

- F21V11/00** **Screens not covered by groups [F21V1/00](#), [F21V3/00](#), [F21V7/00](#) or [F21V9/00](#)** [C0904]

- F21V11/02 . using parallel laminae or strips, e.g. of Venetian-blind type ([F21V11/06](#) takes precedence)
- F21V11/04 . . adjustable

- F21V11/06 . using crossed laminae or strips, [N: e.g. grid-shaped louvers]; using lattices or honeycombs [N1204]
- F21V11/06M . . [N: adjustable] [N1204]

- F21V11/08 . using diaphragms containing one or more apertures
- F21V11/10 . . of iris type
- F21V11/12 . . of slot type
- F21V11/14 . . with many small apertures

- F21V11/16 . using sheets without apertures, [N: i.e. masks for shielding light,]e.g. fixed

- (F21V11/02, F21V11/06 take precedence; [N: for vehicle head lamps F21S48/14D])
[N1204]
- F21V11/18 . . . movable, e.g. flaps, slides
- F21V11/18P . . . [N: pivotable] [N1204]
- F21V11/18S . . . [N: slidable] [N1204]
- F21V13/00** **Producing particular characteristics or distribution of the light emitted by means of a combination of elements specified in two or more of main groups F21V 1/00 F21V11/00** (by means of a combination of two or more elements covered by a single one of main groups F21V 1/00 [F21V11/00](#), see the relevant group; changing the characteristics or distribution of the light emitted by adjustment of parts [F21V14/00](#))
[C0904]
- F21V13/02 . Combinations of only two kinds of elements
- F21V13/04 . . the elements being reflectors and refractors [N: (for vehicle rear lights [F21S48/24](#))]
[C1202]
- F21V13/04L . . . [N: for portable lighting devices] [N0109]
- F21V13/06 . . . a reflector being rotatable
- F21V13/08 . . the elements being reflectors and filters
- F21V13/10 . . the elements being reflectors and screens
- F21V13/12 . Combinations of only three kinds of elements
- F21V13/14 . . the elements being reflectors, refractors, and filters
- F21V14/00** **Changing the characteristics or distribution of the light emitted by adjustment of parts** [N: or by interposition of elements with electrically controlled variable light transmissivity] (reflectors with provision for adjusting the curvature [F21V7/16](#); light filters with provision for variation of colour or intensity [F21V9/10](#); screens using iris-type diaphragms [F21V11/10](#); adjustable mountings for lighting devices [F21V21/14](#)) [N0109]
[C0403]
- F21V14/00M . [N: by interposition of elements with electrically controlled variable light transmissivity, e.g. liquid crystal elements or electrochromic devices (liquid crystal elements [G02F1/13](#))] [N0403]
- F21V14/00R . [N: by means of optical elements, e.g. films, filters or screens, being rolled up around a roller] [N1204]
- F21V14/02 . by movement of light sources [N: (in vehicle head lamps [F21S48/17L2](#))] [N0109]
[C1202]
- F21V14/02L . . [N: in portable lighting devices] [N0109]
- F21V14/04 . by movement of reflectors [N: (in vehicle head lamps [F21S48/17R2](#))] [N0109] [C1202]
- F21V14/04L . . [N: in portable lighting devices] [N0109]
- F21V14/06 . by movement of refractors [N: (in vehicle head lamps [F21S48/17F2](#))] [N0109] [C1202]
- F21V14/06L . . [N: in portable lighting devices] [N0109]
- F21V14/08 . by movement of the screens [N: or filters] [N0109] [C1202]

F21V14/08L . . [N: in portable lighting devices] [N0109]

Guide heading: **Details of those parts not involved in light emission or distribution, e.g. fittings**

F21V15/00 **Protecting lighting devices from damage [(gas-tight or water tight arrangements [F21V31/00](#))] [C1207]**

F21V15/00V . [N: Measures against vandalism, stealing or tampering (F21V15/02, F21V15/04 take precedence)] [N1204]

F21V15/01 . Housings, e.g. material or assembling of housing parts ([F21V15/02](#) takes precedence [N: housings forming signs or letters [G09F13/04](#)]) [N0012] [C1207]

[N: **WARNING**
Not complete, see [F21V15/00](#)
]

F21V15/01C . . [N: being designed to facilitate cooling] [N1203]

F21V15/01D . . [N: Housings with variable shape or dimensions, e.g. by means of elastically deformable materials or by movement of parts forming telescopic extensions of the housing body] [N1204]

F21V15/01E . . [N: the housing being an extrusion] [N0109]

F21V15/01S . . Devices for covering joints between adjacent lighting devices; End coverings [N0012]

[N: **WARNING**
Not complete, see [F21V15/00](#)
]

F21V15/02 . Cages

F21V15/04 . Resilient mountings, e.g. shock absorbers (in general [F16F15/04](#) [N: shock absorbing devices of vehicle headlamp housings [B60Q1/04F](#)]) [C1207]

F21V15/06 . Thermal insulation [N: (for vehicle head lamps [F21S48/32](#))] [N0005] [C1202]

F21V17/00 **Fastening of component parts of lighting devices, e.g. shades, globes, refractors, reflectors, filters, screens, grids or protective cages (of light sources or light holders [F21V19/00](#); gas-tight or water-tight arrangements [F21V31/00](#); [N: for vehicle rear lights [F21S48/20](#); for vehicle head lights [F21S48/10](#)]) [C1202]**

F21V17/00D . [N: with provision for interchangeability, i.e. component parts being especially adapted to be replaced by another part with the same or a different function (F21V17/10 takes precedence)] [N1204]

F21V17/00K . [N: with keying means, i.e. for enabling the assembling of component parts in distinctive positions, e.g. for preventing wrong mounting] [N1204]

F21V17/00S . [N: with provision for shipment or storage] [N0109]

F21V17/02 . with provision for adjustment ([F21V17/04](#), [F21V17/06](#), [N: [F21V17/08](#)]) take precedence) [C0012]

- F21V17/04 . the fastening being onto or by the light source
- F21V17/06 . the fastening being onto or by the lampholder
- F21V17/08 . onto the supporting or suspending arrangements of the lighting device, e.g. power cords, standards [N0012]
 [N: **WARNING**
 Not complete, see [F21V17/00](#)
]
- F21V17/10 . characterised by specific fastening means or way of fastening ([F21V17/02](#) to [F21V17/08](#) take precedence) [N0109]
- F21V17/10A . . [N: permanently, e.g. welding, gluing or riveting] [N0109]
- F21V17/10B . . [N: using gravity or suction] [N0109]
- F21V17/10C . . [N: using feather joints, e.g. tongues and grooves, with or without friction] [N0109]
- F21V17/10D . . [N: using magnets] [N0109]
- F21V17/10F . . [N: using hinge joints] [N0109]
- F21V17/10V . . [N: using hook and loop-type fasteners] [N1204]
- F21V17/12 . . by screwing [N0109]
- F21V17/14 . . Bayonet-type fastening [N0109]
- F21V17/16 . . by deformation of parts; Snap action mounting [N0109]
- F21V17/16A . . . [N: the parts being subjected to traction or compression, e.g. coil springs] [N0109]
- F21V17/16B . . . [N: the parts being subjected to bending, e.g. snap joints] [N0109]
- F21V17/16C . . . [N: the parts being subjected to torsion, e.g. spiral springs] [N0109]
- F21V17/16D . . . [N: the parts being resilient rings acting substantially isotropically, e.g. split rings] [N0109]
- F21V17/18 . . Latch-type fastening, e.g. with rotary action [N0110]
- F21V17/20 . . by toggle-action levers [N0110]

- F21V19/00** **Fastening of light sources or lamp holders** (fastening electric light source solely by the coupling device [H01R33/00](#); [N: special means for attaching candle to candle holder [F21V35/00B](#)]) [C1207]
- F21V19/00A . [N: of sources having contact pins, wires or blades, e.g. pinch sealed lamp ([F21V19/00B](#) takes precedence)]
- F21V19/00B . [N: the light sources being semiconductor devices, e.g. LEDs] [C1207]
- F21V19/00B2 . . [N: Fastening arrangements intended to retain light sources] [N1204]
- F21V19/00B2E . . . [N: the fastening means engaging the encapsulation or the packaging of the semiconductor device] [N1204]
- F21V19/00B2W . . . [N: the fastening means engaging the conductors of the light source, i.e. providing simultaneous fastening of the light sources and their electric connections] [N1204]
- F21V19/00B4 . . [N: Fastening of light source holders, e.g. of circuit boards or substrates holding light sources] [N1204]
- F21V19/00B4A . . . [N: the fastening means being capable of simultaneously attaching of an other

- part, e.g. a housing portion or an optical component] [N1204]
- F21V19/00B4D . . . [N: by deformation of parts or snap action mountings, e.g. using clips] [N1204]
- F21V19/00B4G . . . [N: by tongue and groove connections, e.g. dovetail interlocking means fixed by sliding] [N1204]
- F21V19/00B4P . . . [N: by permanent fixing means, e.g. gluing, riveting or embedding in a potting compound] [N1204]
- F21V19/00B4S . . . [N: by screwing] [N1204]
- F21V19/00C . [N: of point-like light sources, e.g. incandescent or halogen lamps, with screw-threaded or bayonet base (of sources having contact pins, wires or blades [F21V19/00A](#); of LEDs or sources mounted on printed-circuit board [F21V19/00B](#))]
- F21V19/00C1 . . [N: at least one conductive element acting as a support means, e.g. spring-mounted contact plate in a bayonet base]
- F21V19/00C2 . . [N: the support means engaging the vessel of the source]
- F21V19/00F . [N: of tubular light sources, e.g. ring-shaped fluorescent light sources]
- F21V19/00F1 . . [N: of straight tubular light sources, e.g. straight fluorescent tubes, soffit lamps]
- F21V19/00F1A . . . [N: at least one conductive element acting as a support means, e.g. resilient contact blades, piston-like contact]
- F21V19/00F1B . . . [N: the support means engaging the vessel of the source]
- F21V19/00F2 . . [N: of U-shaped tubular light sources, e.g. compact fluorescent tubes]
- F21V19/02 . with provision for adjustment, e.g. for focusing
- F21V19/04 . with provision for changing light source, e.g. turret [N: (auxiliary devices for cleaning, placing, or removing incandescent lamps H01K3/32, fluorescent lamps H01J9/00B1)] [\[C0608\]](#)
- F21V19/04B . . [N: the light source being a semiconductor, e.g. an LED] [N1204]
- F21V19/04P . . [N: the light source being a semiconductor mounted on a holder, e.g. a circuit board] [N1204]
- F21V19/04S . . [N: by using spare light sources comprised in or attached to the lighting device and being intended to replace a defect light source by manual mounting] [N1204]
- F21V19/06 . Attaching mantles or other incandescent bodies to lamp parts
- F21V21/00** **Supporting, suspending, or attaching arrangements for lighting devices** ([F21V17/00](#), [F21V19/00](#) take precedence; arrangement of signalling or lighting devices, the mounting or supporting thereof or circuits therefor, for vehicles in general [B60Q](#), stands for supporting apparatus or articles in general [F16M11/00](#)); **Hand grips** [\[C0012\]](#)
- F21V21/002 . making direct electrical contact, e.g. by piercing ([F21V21/35](#) takes precedence) [\[N0012\]](#)
- F21V21/005 . for several lighting devices in an end-to-end arrangement, i.e. light tracks [\[N0012\]](#)
[N: **WARNING**
Not complete, see [F21V21/00](#)
]
- F21V21/008 . Suspending from a cable or suspension line [\[N0012\]](#)

[N: **WARNING**
 Not complete, see [F21V21/00](#)
]

- F21V21/02 . Wall, ceiling, or floor bases; Fixing pendants or arms to the bases ([F21V21/08](#) takes precedence; bases for movable standing lamps [F21V21/06](#)) [C0012]
- F21V21/02A . . [N: Elongated bases having a U-shaped cross section] [N0109]
- F21V21/03 . . Ceiling bases, e.g. ceiling roses ([F21V21/04](#) takes precedence) [N0012]
- F21V21/04 . . Recessed bases
- F21V21/04F . . . [N: Mounting arrangements specially adapted for false ceiling panels or partition walls made of plates (F21V21/04H takes precedence)] [N1204]
- F21V21/04F4 [N: using clamping means, e.g. for clamping with panel or wall] [N1204]
- F21V21/04F4C [N: actuated by screwing] [N1204]
- F21V21/04F4E [N: with elastically deformable elements, e.g. spring tongues] [N1204]
- F21V21/04F4E6 [N: being tensioned by translation of parts, e.g. by pushing or pulling] [N1204]
- F21V21/04F4E8 [N: being tensioned by rotation of parts] [N1204]
- F21V21/04H . . . [N: Mounting arrangements with fastening means engaging the inner surface of a hole in a ceiling or wall, e.g. for solid walls or for blind holes] [N1204]
- F21V21/04T . . . [N: Mounting arrangements for fastening lighting devices to false ceiling frameworks] [N1204]
- F21V21/04V . . . [N: Mounting arrangements for attaching lighting devices to the ceiling, the lighting devices being recessed in a false or stretched ceiling] [N1204]

- F21V21/06 . Bases for movable standing lamps; Fixing standards to the bases ([F21V21/08](#) takes precedence)

- F21V21/08 . Devices for easy attachment to any desired place, e.g. clip, clamp, magnet
- F21V21/08G . . [N: Adhesive means] [N1204]
- F21V21/08P . . [N: Strap fasteners, e.g. fasteners with a buckle] [N1204]
- F21V21/08S . . [N: Ground spikes] [N1204]
- F21V21/08V . . [N: Hook and loop-type fasteners] [N1204]
- F21V21/084 . . Head fittings ([for medical purposes A61B1/06](#) [N: hats or helmets with lamps [A42B3/04B6B](#)])[N0109] [C1202]
- F21V21/088 . . Clips; Clamps [N0109]
- F21V21/088L . . . [N: for portable lighting devices] [N0109]
- F21V21/092 . . Suction devices [N0109]
- F21V21/092L . . . [N: for portable lighting devices] [N0109]
- F21V21/096 . . Magnetic devices [N0109]
- F21V21/096L . . . [N: for portable lighting devices] [N0109]

- F21V21/10 . Pendants, arms, or standards; Fixing lighting devices to pendants, arms, or standards ([adjustable mounting F21V21/14](#); [construction of posts not peculiar to use with lighting devices E04H12/00](#)) [C0802]
- F21V21/104 . . Pendants [N0012]

[N: **WARNING**

- Not complete, see [F21V21/10](#)
 -]
- F21V21/108 . . Arms [N0012]
- [N: **WARNING**
 - Not complete, see [F21V21/10](#)
 -]
- F21V21/112 . . Fixing lighting devices to pendants ([F21V21/002](#) takes precedence) [N0012]
- [N: **WARNING**
 - Not complete, see [F21V21/10](#)
 -]
- F21V21/116 . . Fixing lighting devices to arms or standards ([F21V21/002](#) takes precedence) [N0012]
- [N: **WARNING**
 - Not complete, see [F21V21/10](#)
 -]
- F21V21/12 . . capable of being elongated or shortened by the insertion or removal of intermediate pieces
- F21V21/13 . Spring-loaded poles fixed at both ends [N0012]
- [N: **WARNING**
 - Not complete, see [F21V21/00](#)
 -]
- F21V21/14 . Adjustable mountings
- F21V21/14L . . [N: for portable lighting devices] [N0109]
- F21V21/15 . . specially adapted for power operation, e.g. by remote control [N0012]
- [N: **WARNING**
 - Not complete, see [F21V21/14](#)
 -]
- F21V21/16 . . using wires or cords
- F21V21/18 . . . operated by springs
- F21V21/20 . . . operated by weights
- F21V21/22 . . telescopic
- F21V21/24 . . Lazy-tongs
- F21V21/26 . . Pivoted arms
- F21V21/28 . . . adjustable in more than one plane
- F21V21/29 employing universal joints
- F21V21/30 . . Pivoted housings or frames
- F21V21/32 . . Flexible tubes
- F21V21/34 . Supporting elements displaceable along a guiding element [N: (telescopic mounting of lighting devices [F21V21/22](#))] [C1202]
- F21V21/35 . . with direct electrical contact between the supporting element and electric conductors running along the guiding element [N0012]

[N: **WARNING**
Not complete, see [F21V21/34](#)
]

- F21V21/36 . Hoisting or lowering devices, e.g. for maintenance ([F21V21/14 takes precedence](#))
- F21V21/38 . . with a cable

- F21V21/40 . Hand grips [N0012]

[N: **WARNING**
Not complete, see [F21V21/00](#)
]

- F21V21/40H . . [N: for operation or dentist lamps] [N0109]
- F21V21/40L . . [N: for portable lighting devices] [N0109]

F21V23/00 **Arrangements of electric circuit elements in or on lighting devices** (electric circuits per se [H05B39/00](#))

- F21V23/00C . [N: the elements being electrical wires or cables] [N1204]
- F21V23/00C2 . . [N: Arrangements of cables or conductors inside a lighting device, e.g. means for guiding along parts of the housing or in a pivoting arm] [N1204]
- F21V23/00D . [N: the elements being electronics drivers or controllers for operating the light source, e.g. for a LED array] [N1204]
- F21V23/00D2 . . [N: arranged on a substrate, e.g. a printed circuit board] [N1204]
- F21V23/00D2C . . . [N: the substrate is supporting also the light source] [N1204]
- F21V23/00D2S . . . [N: the substrate being distinct from the light source holder] [N1204]
- F21V23/00D4 . . [N: enclosed in a casing] [N1204]
- F21V23/00D4E . . . [N: the casing being outside the housing of the lighting device] [N1204]
- F21V23/00D4I . . . [N: the casing being inside the housing of the lighting device] [N1204]
- F21V23/02 . the elements being transformers, impedances [N: or power supply units, e.g. a transformer with a rectifier] [C1207]
- F21V23/02P . . [N: Power supplies in a casing (F21V23/00D takes precedence)] [N1204]
- F21V23/02T . . [N: Fastening of transformers or ballasts][N0109]
- F21V23/04 . the elements being switches (safety devices [F21V25/00](#))
- F21V23/04F . . [N: for flashing] [N0109]
- F21V23/04L . . [N: specially adapted to be used with portable lighting devices] [N0109] [M1207]
- F21V23/04L2 . . . [N: the switch being part of, or disposed on the tail cap portion thereof] [N1204]
- F21V23/04L4 . . . [N: the switch being part of, or disposed on the lamp head portion thereof] [N1204]
- F21V23/04R . . [N: activated by remote control means] [N0109]
- F21V23/04S . . [N: activated by means of a sensor, e.g. motion or photodetectors] [N0109]
- F21V23/04S2 . . . [N: the sensor receiving a signal from a remote controller] [N1204]
- F21V23/04S4 . . . [N: the sensor sensing the operating status of the lighting device, e.g. to detect failure of a light source or to provide feedback to the device] [N1204]

- F21V23/04S6 . . . [N: the sensor sensing the level of ambient illumination, e.g. dawn or dusk sensors] [N1204]
- F21V23/04S8 . . . [N: the sensor detecting the proximity, the presence or the movement of an object or a person] [N1204]
- F21V23/04S8C [N: by means of an image recording device, e.g. a camera] [N1204]
- F21V23/04S10 . . . [N: the sensor sensing the physical interaction between a user and certain areas located on the lighting device, e.g. a touch sensor] [N1204]
- F21V23/04S12 . . . [N: the sensor detecting a change in orientation, a movement or an acceleration of the lighting device, e.g. a tilt switch] [N1204]

- F21V23/06 . the elements being coupling devices, [N: e.g. connectors] [C1207]

- F21V25/00** **Safety devices structurally associated with lighting devices** (gas- tight or water-tight arrangements [F21V31/00](#); in general [F16P](#); protective circuit arrangements per se [H02H7/00](#))

- F21V25/02 . coming into action when lighting device is disturbed, dismantled, or broken
- F21V25/04 . . breaking the electric circuit
- F21V25/06 . . feeding a quenching fluid to the light source
- F21V25/08 . . cutting the incandescent filament

- F21V25/10 . coming into action when lighting device is overloaded, e.g. thermal switch

- F21V25/12 . Flame-proof or explosion-proof arrangements
- F21V25/12M . . [N: using intumescent material, i.e. using materials which swells up as a result of heat exposure] [N1204]

- F21V27/00** **Cable-stowing arrangements structurally associated with lighting devices, e.g. reels**(storing lengths of cable in general [B65H](#)) [N: the lighting devices being vehicle headlamps [F21V19/00M2](#); the lighting devices being vehicle lights [F21V19/00Q2](#)]

- F21V27/00L . [N: for portable lighting devices] [N0109]

- F21V27/02 . Cable inlets [N0012]

- [N: **WARNING**
Not complete, see [F21V27/00](#)
]

- F21V29/00** **Cooling or heating arrangements** (reflectors specially adapted for cooling [F21V7/20](#); cooling of air-treatment systems with air-flow over lighting fixtures [F24F3/056](#); lighting fixtures combined with outlets for air-treatment systems [F24F13/078](#); cooling of projectors [G03B21/16](#) [N: cooling of lighting devices or systems specially adapted for vehicles [F21S48/32](#)]) [C1203]

- [N: **WARNING**[N1203]
Groups [F21V29/20](#) to [F21V29/40](#) do not correspond to former or current IPC groups.
Concordance ECLA : IPC for these groups is as follows: [F21V29/20-F21V29/40](#) :
[F21V29/00](#)
]

- F21V29/00C . [N: Cooling arrangements ([F21V29/02](#) takes precedence)] [N0804]
- F21V29/00C2 . . [N: Natural cooling, i.e. by natural convection, conduction or radiation] [N0804]
- F21V29/00C10 . . [N: Cooling devices or systems using condensation or evaporation of a fluid, e.g. heat pipes or two phase cooling systems] [N1203]

- F21V29/00H . [N: Heating arrangements ([heating arrangements structurally associated with electric lamps H01J61/52](#))] [N0804]

- [N: **WARNING** [N0804]
not complete, see [F21V31/03M](#), [F21V29/00](#)
]

- F21V29/02 . Cooling by forcing air [N: or gas] over or around the light source ([cooling arrangements structurally associated with electric lamps H01J61/52](#), [H01K1/58](#)) [N0005] [C1203]
- F21V29/02C . . [N: wherein the circuit for air or gas circulation is a closed cavity] [N1203]
- F21V29/02F . . [N: using fans for intake] [N1203]
- F21V29/02H . . [N: using fans for discharging] [N1203]

- F21V29/20 . [N: Cooling devices, cooling systems or arrangements thereof] [N1203]
- F21V29/22 . . [N: being heatsinks with heat dissipating means] [N1203]
- F21V29/22B . . . [N: the heat dissipating means being fins or blades] [N1203]
- F21V29/22B2 [N: the fins or blades being planar] [N1203]
- F21V29/22B2B [N: the planes being inclined with respect to the joining surfaces of the heatsinks] [N1203]
- F21V29/22B2D [N: the planes converging with planes of other planar fins or blades] [N1203]
- F21V29/22B2D2 [N: the axis of convergence having the same direction as the emitted light axis] [N1203]
- F21V29/22B2D4 [N: the axis of convergence being perpendicular to the emitted light axis] [N1203]
- F21V29/22B2F [N: in parallel arrangement with another plane containing the fins or blades, e.g. pectinated fins] [N1203]
- F21V29/22B2F2 [N: the planes being parallel to the emitted light axis] [N1203]
- F21V29/22B2F4 [N: the planes being perpendicular to the emitted light axis] [N1203]
- F21V29/22B4 [N: having an arrangement of a plurality of fins or blades characterised by different areas of heat exchange, e.g. variable thicknesses of the fins or blades, different heights, different spacing between consecutive fins or blades, or variable pitches] [N1203]
- F21V29/22B6 [N: the fins or blades being wrapped around an axis, e.g. as spiral fins, helical fins or fins wrapped around the emitted light axis] [N1203]
- F21V29/22D . . . [N: the heat dissipating means being wire-like or pin-like cooling means] [N1203]
- F21V29/22D2 [N: being inclined with respect to the joining surfaces of the heatsink] [N1203]
- F21V29/22D4 [N: having an arrangement of a plurality of wire-like or pin-like cooling means characterised by different areas of heat exchange, e.g. variable thicknesses of the fins, different heights, different spacing between consecutive fins , or variable pitch] [N1203]

- F21V29/22F . . . [N: the heat sink having an arrangement of apertures, ducts or channels; the ducts or channels being in the body of the heatsink] [N1203]
- F21V29/24 . . [N: characterised by the selection of materials or liquid for the cooling device] [N1203]
- F21V29/24B . . . [N: Ceramics or glass] [N1203]
- F21V29/24D . . . [N: Organics with or without thermo-conductive additives or coatings, e.g. filled polymer composites or with additives using nano particles] [N1203]
- F21V29/24F . . . [N: Metals] [N1203]
- F21V29/24H . . . [N: Cooling liquids] [N1203]
- F21V29/26 . . [N: Cooling with an arrangement of a plurality of heatsink units] [N1203]
- F21V29/26B . . . [N: in direct thermal and mechanical contact to each other to form a single system] [N1203]
- F21V29/26D . . . [N: using split and remote units thermally interconnected, e.g. by thermally conductive bars or heat pipes] [N1203]
- F21V29/26F . . . [N: the units being adjustable with respect to each other, e.g. hinged heatsink units] [N1203]

- F21V29/30 . [N: Forced cooling using liquids, e.g. water] [N1203]
- F21V29/40 . [N: Forced cooling by electrically-powered actuators (**fans** [F21V29/02F](#))] [N1203]
- F21V29/40B . . [N: Multi-phase cooling systems actuated by pumps] [N1203]
- F21V29/40D . . [N: Cooling systems using a fluid actuated by vibrating means or using a ionic wind] [N1203]
- F21V29/40F . . [N: Cooling systems using the Peltier effect] [N1203]

F21V31/00 Gas-tight or water-tight arrangements

- F21V31/00B . [N: Sealing arrangements therefor] [N0904]
- F21V31/03 . with provision for venting [N: (**for vehicle head lights** [F21S48/33V2](#); **for vehicle rear lights** [F21S48/33V4](#))] [N0110] [C1202]
- F21V31/04 . Provision of filling media (**safety devices** [F21V25/00](#); **cooling arrangements** [F21V29/00](#))

F21V33/00 Structural combinations of lighting devices with other articles, not otherwise provided for [C0904]

- F21V33/00A . [N: Personal or domestic articles] [N0102]
- F21V33/00A2 . . [N: Clothing or clothing accessories, e.g. scarfs, gloves or belts] [N0102]
- F21V33/00A3 . . [N: Furniture (**hospital beds** [F21V33/00D2B](#))] [N0102]
- F21V33/00A3B . . . [N: Furnishing for windows and doors (**sunshades** [F21V33/00B](#))] [N0102]
- F21V33/00A3D . . . [N: Racks for compact discs or the like] [N0102]
- F21V33/00A4 . . [N: Household or table equipment] [N0102]
- F21V33/00A4B . . . [N: Decorative household equipment, e.g. plant holders or food dummies] [N0102]
- F21V33/00A4B2 [N: Paintings, pictures or photographs; Frames therefor] [N0102]

- F21V33/00A4D . . . [N: Table-ware or table equipment, e.g. dishes, cutlery or trays] [N0102]
- F21V33/00A5 . . [N: Sanitary equipment, e.g. mirrors, showers, toilet seats or paper dispensers] [N0102]
- F21V33/00A6 . . [N: Household appliances, e.g. washing machines or vacuum cleaners] [N0102]
- F21V33/00A8 . . [N: Office articles, e.g. bookmarks, desk lamps with drawers, stands for books or music scores] [N0102]
- F21V33/00A9 . . [N: Audio or video equipment, e.g. televisions, telephones, cameras or computers; Remote control devices therefor] [N0102]
- F21V33/00A9B . . . [N: Audio equipment, e.g. music instruments, radios or speakers] [N0102]
- F21V33/00B . [N: General building constructions or finishing work for buildings, e.g. roofs, gutters, stairs or floors; Garden equipment; Sunshades or parasols] [N0102]
- F21V33/00D . [N: Health, life-saving or fire-fighting equipment] [N0102]
- F21V33/00D2 . . [N: Medical equipment] [N0102]
- F21V33/00D2B . . . [N: Hospital beds] [N0102]
- F21V33/00D4 . . [N: Safety or security signalisation, e.g. smoke or burglar alarms, earthquake detectors; Self-defence devices] [N0102]
- F21V33/00E . [N: Leisure, hobby or sport articles, e.g. toys, games or first-aid kits; Hand tools; Toolboxes] [N0102]
- F21V33/00E2 . . [N: Hand tools; Toolboxes] [N0102]
- F21V33/00F . [N: Ventilating systems (lighting fixtures combined with outlets for air treatment systems [F24F13/078](#))] [N0102] [C0904]
- F21V33/00F2 . . [N: with heating or cooling devices] [N0102]
- F21V33/00F4 . . [N: Fans, e.g. ceiling fans (forced cooling for lighting devices [F21V29/02](#))] [N0102]
- F21V35/00** **Candle holders**
- F21V35/00B . [N: Special means for attaching the candle to the candle holder] [N0304]
- F21V35/00D . [N: Drop catchers; Shade holders] [N0304]
- F21V36/00** **Arrangements of mantles or other incandescent bodies on burners (attaching to lamp parts [F21V19/06](#))**
- F21V36/02 . in ceiling lamps
- F21V37/00** **Details of lighting devices employing combustion as light source, not otherwise provided for; Night lamps; Votive lamps [C0304]**
- F21V37/00L . [N: using liquid fuel] [N0304]
- F21V37/00L2 . . [N: Fuel containers] [N0304]
- F21V37/00L2D . . . [N: Filling or level checking] [N0303]
- F21V37/00L2F . . . [N: Fastening of the container to other parts of the lamp] [N0304]
- F21V37/00L4 . . [N: Wicks] [N0304]

- F21V37/00L4B . . . [N: vegetal ([F21V37/00L4F](#) takes precedence)] [N0304]
- F21V37/00L4D . . . [N: mineral ([F21V37/00L4F](#) takes precedence)] [N0304]
- F21V37/00L4F . . . [N: combination of vegetal and mineral] [N0304]
- F21V37/00L4H . . . [N: Cleaning devices] [N0304]
- F21V37/00L6 . . . [N: Fuel supply] [N0304]
- F21V37/00L6B . . . [N: using hydrostatic pressure or weights] [N0304]
- F21V37/00L6D . . . [N: using air or gas pressure] [N0304]
- F21V37/00L6F . . . [N: Controlling means, e.g. floaters] [N0304]
- F21V37/00L8 . . . [N: Reflectors, cover glasses, chimneys; Smoke-removing devices; Preheaters] [N0304]
- F21V37/00L8B . . . [N: Reflectors] [N0304]
- F21V37/00L8D . . . [N: Chimneys] [N0304]
- F21V37/00L8F . . . [N: Globbs] [N0304]
- F21V37/00L10 . . . [N: Fastening or safety devices for reflectors, cover glasses or chimneys] [N0304]
- F21V37/00L10B . . . [N: Fastening of chimneys ([F21V37/00L10F](#) takes precedence)] [N0304]
- F21V37/00L10D . . . [N: Fastening of cover glasses ([F21V37/00L10F](#) takes precedence)] [N0304]
- F21V37/00L10F . . . [N: Devices for lifting chimneys or cover glasses] [N0304]
- F21V37/00L10H . . . [N: Protections against shocks] [N0304]

- F21V37/00N . . . [N: Night lamps; Votive lamps] [N0304]

- F21V37/02 . . . Special adaptation for protection against draughts [N: ([for lanterns F21L19/00D](#)); Draft controllers] [N0005] [C0904]

- F21V99/00** . . . **Subject matter not provided for in other groups of this subclass** [N0704]