

CPC**COOPERATIVE PATENT CLASSIFICATION****F21V****DETAILS OF LIGHTING DEVICES, OF GENERAL APPLICATION****NOTES**

1. Groups [F21V 1/00-F21V 14/00](#) cover aspects related to light emission or distribution. Groups [F21V 15/00-F21V 31/00](#) cover aspects not related to light emission or distribution.
2. Details of non-electric lighting devices or systems are classified in groups [F21V 35/00-F21V 37/00](#) only if a special adaptation related to the use of a non-electric light source is of interest.
3. In this subclass, it is desirable to add the indexing codes of subclasses [F21W](#) and [F21Y](#)

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[F21V 8/00](#) covered by [G02B 6/00](#)

{Aspects related to light emission or distribution}**F21V 1/00****Shades for light sources {i.e. lampshades for table, floor, wall or ceiling lamps}**

- F21V 1/02 . Frames
- F21V 1/04 . . rigid ([F21V 1/08](#) takes precedence)
- F21V 1/06 . . foldable or collapsible
- F21V 1/08 . . adjustable
- F21V 1/10 . Rotating shades
- F21V 1/12 . Composite shades {i.e. shades being made of distinct parts}
- F21V 1/14 . Covers for frames; Frameless shades
- F21V 1/143 . . {The cover being attached to a supporting lampshade frame}
- F21V 1/146 . . {Frameless shades}
- F21V 1/16 . . characterised by the material
- F21V 1/18 . . . the material being paper
- F21V 1/20 . . . the material being glass
- F21V 1/22 . . . the material being plastics
- F21V 1/24 . . . the material being metal
- F21V 1/26 . Manufacturing shades

F21V 3/00**Globes; Bowls; Cover glasses (with refracting properties [F21V 5/00](#); with reflecting properties [F21V 7/00](#); characterised by cooling arrangements [F21V 29/506](#))**

- F21V 3/02 . characterised by the shape
- F21V 3/023 . . {Chinese lanterns; Balloons}

- F21V 3/026 . . . {being inflatable}
- F21V 3/04 . characterised by the material; characterised by surface treatments or coatings
- F21V 3/0409 . . {characterised by the material}
- F21V 3/0418 . . . {the material being glass}
- F21V 3/0427 {the material diffusing light, e.g. translucent glass}
- F21V 3/0436 {the material being plastics}
- F21V 3/0445 {the material diffusing light, e.g. translucent plastics}
- F21V 3/0454 . . . {comprising air or water bubbles, e.g. foamed materials}
- F21V 3/0463 . . . {comprising fluorescent or light-storing materials}
- F21V 3/0472 . . {Coatings}
- F21V 3/0481 . . . {provided with fluorescent or light-storing materials}
- F21V 3/049 . . {Patterns or structured surfaces for diffusing light, e.g. frosted surfaces}

F21V 5/00**Refractors for light sources** (characterised by cooling arrangements
[F21V 29/504](#))

- F21V 5/002 . {using micro-optical elements for redirecting or diffusing light}
- F21V 5/003 . . {using holograms}
- F21V 5/004 . . {using micro-lenses}
- F21V 5/005 . . {using micro-prisms}
- F21V 5/006 . {applied to portable lighting devices}
- F21V 5/007 . {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 F21V 5/008](#))}
- F21V 5/008 . {Combination of two or more successive refractors along an optical axis}
- F21V 5/02 . of prismatic shape ([F21V 5/04 takes precedence](#))
- F21V 5/04 . of lens shape
- F21V 5/041 . . {Ball lenses}
- F21V 5/043 . . {the lens having cylindrical faces, e.g. rod lenses, toric lenses}
- F21V 5/045 . . {the lens having discontinuous faces, e.g. Fresnel lenses}
- F21V 5/046 . . {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}
- F21V 5/048 . . {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}
- F21V 5/06 . Hanging lustres for chandeliers
- F21V 5/08 . producing an asymmetric light distribution

F21V 7/00**Reflectors for light sources** (characterised by cooling arrangements
[F21V 29/505](#))

- F21V 7/0008 . {providing for indirect lighting}

- F21V 7/0016
 - . . {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}
- F21V 7/0025
 - . {Combination of two or more reflectors for a single light source (array of reflectors for a cluster of light sources [F21V 7/0083](#))}
- F21V 7/0033
 - . . {with successive reflections from one reflector to the next or following}
- F21V 7/0041
 - . . . {for avoiding direct view of the light source or to prevent dazzling}
- F21V 7/005
 - . {with an elongated shape to cooperate with linear light sources}
- F21V 7/0058
 - . {adapted to cooperate with light sources of shapes different from point-like or linear, e.g. circular light sources}
- F21V 7/0066
 - . {specially adapted to co operate with point like light sources; specially adapted to co operate with light sources the shape of which is unspecified ([F21V 7/16](#) - [F21V 7/22](#) take precedence)}
- F21V 7/0075
 - . {for portable lighting devices}
- F21V 7/0083
 - . {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 [F21V 7/0025](#))}
- F21V 7/0091
 - . {using total internal reflection}
- F21V 7/04
 - . Optical design
- F21V 7/041
 - . . {with conical or pyramidal surface}
- F21V 7/043
 - . . {with cylindrical surface}
- F21V 7/045
 - . . {with spherical surface}
- F21V 7/046
 - . . {with involute curvature}
- F21V 7/048
 - . . {with facets structure}
- F21V 7/05
 - . . plane
- F21V 7/06
 - . . with parabolic curvature
- F21V 7/07
 - . . with hyperbolic curvature
- F21V 7/08
 - . . with elliptical curvature
- F21V 7/09
 - . . with a combination of different curvatures
- F21V 7/10
 - . Construction
- F21V 7/16
 - . . with provision for adjusting the curvature
- F21V 7/18
 - . . with provision for folding or collapsing
- F21V 7/22
 - . characterised by the material; characterised by surface treatments or coatings
- F21V 9/00**
 - Light filters** (coloured shades [F21V 1/00](#); characterised by cooling arrangements [F21V 29/502](#)); **Selection of luminescent materials for light screens**
- F21V 9/02
 - . for simulating daylight ([F21V 9/04](#), [F21V 9/06](#), [F21V 9/16](#) take precedence)
- F21V 9/04
 - . for filtering out infra-red radiation (using liquid-filled chambers [F21V 9/12](#))
- F21V 9/06
 - . for filtering out ultra-violet radiation ([F21V 9/16](#) takes precedence)
- F21V 9/08
 - . for producing coloured light, e.g. monochromatic; for reducing intensity of light ([F21V 9/16](#) takes precedence)
- F21V 9/083
 - . . {for portable lighting devices}
- F21V 9/10
 - . . with provision for variation of the colour or intensity ([F21V 9/12](#) takes precedence)

F21V 9/12	<ul style="list-style-type: none"> with liquid-filled chambers
F21V 9/14	<ul style="list-style-type: none"> for producing polarised light
F21V 9/16	<ul style="list-style-type: none"> Selection of luminescent materials for screens
F21V 11/00	Screens not covered by groups F21V 1/00, F21V 3/00, F21V 7/00 or F21V 9/00 (characterised by cooling arrangements F21V 29/502)
F21V 11/02	<ul style="list-style-type: none"> using parallel laminae or strips, e.g. of Venetian-blind type (F21V 11/06 takes precedence)
F21V 11/04	<ul style="list-style-type: none"> adjustable
F21V 11/06	<ul style="list-style-type: none"> using crossed laminae or strips, {e.g. grid-shaped louvers}; using lattices or honeycombs
F21V 11/065	<ul style="list-style-type: none"> {adjustable}
F21V 11/08	<ul style="list-style-type: none"> using diaphragms containing one or more apertures
F21V 11/10	<ul style="list-style-type: none"> of iris type
F21V 11/12	<ul style="list-style-type: none"> of slot type
F21V 11/14	<ul style="list-style-type: none"> with many small apertures
F21V 11/16	<ul style="list-style-type: none"> using sheets without apertures, e.g. fixed
F21V 11/18	<ul style="list-style-type: none"> movable, e.g. flaps, slides
F21V 11/183	<ul style="list-style-type: none"> {pivotal}
F21V 11/186	<ul style="list-style-type: none"> {slidable}
F21V 13/00	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 F21V 11/00 (by means of a combination of two or more elements covered by a single one of main groups F21V 1/00 F21V 11/00, see the relevant group; changing the characteristics or distribution of the light emitted by adjustment of parts F21V 14/00)
F21V 13/02	<ul style="list-style-type: none"> Combinations of only two kinds of elements
F21V 13/04	<ul style="list-style-type: none"> the elements being reflectors and refractors {(for vehicle rear lights F21S 48/24)}
F21V 13/045	<ul style="list-style-type: none"> {for portable lighting devices}
F21V 13/06	<ul style="list-style-type: none"> a reflector being rotatable
F21V 13/08	<ul style="list-style-type: none"> the elements being reflectors and filters
F21V 13/10	<ul style="list-style-type: none"> the elements being reflectors and screens
F21V 13/12	<ul style="list-style-type: none"> Combinations of only three kinds of elements
F21V 13/14	<ul style="list-style-type: none"> the elements being reflectors, refractors, and filters
F21V 14/00	Changing the characteristics or distribution of the light emitted by adjustment of parts {or by interposition of elements with electrically controlled variable light transmissivity} (reflectors with provision for adjusting the curvature F21V 7/16; light filters with provision for variation of colour or intensity F21V 9/10; screens using adjustable parallel laminae or strips, e.g. of Venetian-blind type, F21V 11/04; screens using iris-type diaphragms F21V 11/10; screens using movable sheets without apertures, e.g. flaps or slides, F21V 11/18; adjustable mountings for lighting devices F21V 21/14)

- F21V 14/003
 - {by interposition of elements with electrically controlled variable light transmissivity, e.g. liquid crystal elements or electrochromic devices (liquid crystal elements [G02F 1/13](#))}
- F21V 14/006
 - {by means of optical elements, e.g. films, filters or screens, being rolled up around a roller}
- F21V 14/02
 - by movement of light sources {(in vehicle head lamps [F21S 48/1742](#))}
- F21V 14/025
 - . {in portable lighting devices}
- F21V 14/04
 - by movement of reflectors {(in vehicle head lamps [F21S 48/1757](#))}
- F21V 14/045
 - . {in portable lighting devices}
- F21V 14/06
 - by movement of refractors {(in vehicle head lamps [F21S 48/1721](#))}
- F21V 14/065
 - . {in portable lighting devices}
- F21V 14/08
 - by movement of the screens {or filters}
- F21V 14/085
 - . {in portable lighting devices}

{Aspects not related to light emission or distribution, e.g. fittings}

- F21V 15/00**
Protecting lighting devices from damage (protection from thermal damage [F21V 29/00](#); gas-tight or water-tight arrangements [F21V 31/00](#))
- F21V 15/005
 - {Measures against vandalism, stealing or tampering ([F21V 15/02](#), [F21V 15/04](#) take precedence)}
- F21V 15/01
 - Housings, e.g. material or assembling of housing parts ([F21V 15/02](#) takes precedence { housings forming signs or letters [G09F 13/04](#)})
- F21V 15/012
 - . {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}
- F21V 15/013
 - . {the housing being an extrusion}
- F21V 15/015
 - . Devices for covering joints between adjacent lighting devices; End coverings
- F21V 15/02
 - Cages
- F21V 15/04
 - Resilient mountings, e.g. shock absorbers (in general [F16F 15/04](#) {shock absorbing devices of vehicle headlamp housings [B60Q 1/0491](#)})
- F21V 17/00**
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 [F21V 19/00](#))
- F21V 17/002
 - {with provision for interchangeability, i.e. component parts being especially adapted to be replaced by another part with the same or a different function ([F21V 17/10](#) takes precedence)}
- F21V 17/005
 - {with keying means, i.e. for enabling the assembling of component parts in distinctive positions, e.g. for preventing wrong mounting}
- F21V 17/007
 - {with provision for shipment or storage}
- F21V 17/02
 - with provision for adjustment ([F21V 17/04](#) - [F21V 17/08](#) take precedence)
- F21V 17/04
 - the fastening being onto or by the light source
- F21V 17/06
 - the fastening being onto or by the lampholder
- F21V 17/08
 - onto the supporting or suspending arrangements of the lighting device, e.g. power cords, standards

- F21V 17/10
 - characterised by specific fastening means or way of fastening ([F21V 17/02](#) - [F21V 17/08](#) take precedence)
- F21V 17/101
 - • {permanently, e.g. welding, gluing or riveting}
- F21V 17/102
 - • {using gravity or suction}
- F21V 17/104
 - • {using feather joints, e.g. tongues and grooves, with or without friction}
- F21V 17/105
 - • {using magnets}
- F21V 17/107
 - • {using hinge joints}
- F21V 17/108
 - • {using hook and loop-type fasteners}
- F21V 17/12
 - • by screwing
- F21V 17/14
 - • Bayonet-type fastening
- F21V 17/16
 - • by deformation of parts; Snap action mounting
- F21V 17/162
 - • • {the parts being subjected to traction or compression, e.g. coil springs}
- F21V 17/164
 - • • {the parts being subjected to bending, e.g. snap joints}
- F21V 17/166
 - • • {the parts being subjected to torsion, e.g. spiral springs}
- F21V 17/168
 - • • {the parts being resilient rings acting substantially isotropically, e.g. split rings}
- F21V 17/18
 - • Latch-type fastening, e.g. with rotary action
- F21V 17/20
 - • by toggle-action levers
- F21V 19/00**
 - **Fastening of light sources or lamp holders** (fastening electric light source solely by the coupling device [H01R 33/00](#); {special means for attaching candle to candle holder [F21V 35/003](#)})
- F21V 19/0005
 - {of sources having contact pins, wires or blades, e.g. pinch sealed lamp ([F21V 19/001](#) takes precedence)}
- F21V 19/001
 - {the light sources being semiconductor devices, e.g. LEDs}
- F21V 19/0015
 - • {Fastening arrangements intended to retain light sources}
- F21V 19/002
 - • • {the fastening means engaging the encapsulation or the packaging of the semiconductor device}
- F21V 19/0025
 - • • {the fastening means engaging the conductors of the light source, i.e. providing simultaneous fastening of the light sources and their electric connections}
- F21V 19/003
 - • {Fastening of light source holders, e.g. of circuit boards or substrates holding light sources}
- F21V 19/0035
 - • • {the fastening means being capable of simultaneously attaching of an other part, e.g. a housing portion or an optical component}
- F21V 19/004
 - • • {by deformation of parts or snap action mountings, e.g. using clips}
- F21V 19/0045
 - • • {by tongue and groove connections, e.g. dovetail interlocking means fixed by sliding}
- F21V 19/005
 - • • {by permanent fixing means, e.g. gluing, riveting or embedding in a potting compound}
- F21V 19/0055
 - • • {by screwing}
- F21V 19/006
 - {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 [F21V 19/0005](#); of LEDs or sources mounted on printed-circuit board [F21V 19/001](#))}

- F21V 19/0065
 - {at least one conductive element acting as a support means, e.g. spring-mounted contact plate in a bayonet base}
- F21V 19/007
 - {the support means engaging the vessel of the source}
- F21V 19/0075
 - {of tubular light sources, e.g. ring-shaped fluorescent light sources}
- F21V 19/008
 - {of straight tubular light sources, e.g. straight fluorescent tubes, soffit lamps}
- F21V 19/0085
 - {at least one conductive element acting as a support means, e.g. resilient contact blades, piston-like contact}
- F21V 19/009
 - {the support means engaging the vessel of the source}
- F21V 19/0095
 - {of U-shaped tubular light sources, e.g. compact fluorescent tubes}
- F21V 19/02
 - with provision for adjustment, e.g. for focusing
- F21V 19/04
 - with provision for changing light source, e.g. turret {(auxiliary devices for cleaning, placing, or removing incandescent lamps [H01K 3/32](#), fluorescent lamps [H01J 9/006](#))}
- F21V 19/042
 - {the light source being a semiconductor, e.g. an LED}
- F21V 19/045
 - {the light source being a semiconductor mounted on a holder, e.g. a circuit board}
- F21V 19/047
 - {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}
- F21V 19/06
 - Fastening incandescent mantles or other incandescent bodies to lamp parts; Suspension devices for incandescent mantles or other incandescent bodies (arrangements of mantles or other incandescent bodies on burners [F21V 36/00](#))

F21V 21/00

Supporting, suspending, or attaching arrangements for lighting devices
[\(F21V 17/00, F21V 19/00 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 \[F16M 11/00\]\(#\)\);](#)
Hand grips

- F21V 21/002
 - making direct electrical contact, e.g. by piercing ([F21V 21/35 takes precedence](#))
- F21V 21/005
 - for several lighting devices in an end-to-end arrangement, i.e. light tracks
- F21V 21/008
 - Suspending from a cable or suspension line
- F21V 21/02
 - Wall, ceiling, or floor bases; Fixing pendants or arms to the bases ([F21V 21/08 takes precedence; bases for movable standing lamps \[F21V 21/06\]\(#\)](#))
- F21V 21/025
 - {Elongated bases having a U-shaped cross section}
- F21V 21/03
 - Ceiling bases, e.g. ceiling roses ([F21V 21/04 takes precedence](#))
- F21V 21/04
 - Recessed bases
- F21V 21/041
 - {Mounting arrangements specially adapted for false ceiling panels or partition walls made of plates ([F21V 21/047 takes precedence](#))}
- F21V 21/042
 - {using clamping means, e.g. for clamping with panel or wall}
- F21V 21/043
 - {actuated by screwing}
- F21V 21/044
 - {with elastically deformable elements, e.g. spring tongues}
- F21V 21/045
 - {being tensioned by translation of parts, e.g. by pushing or pulling}
- F21V 21/046
 - {being tensioned by rotation of parts}
- F21V 21/047
 - {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}

- F21V 21/048 . . . {Mounting arrangements for fastening lighting devices to false ceiling frameworks}
- F21V 21/049 . . . {Mounting arrangements for attaching lighting devices to the ceiling, the lighting devices being recessed in a false or stretched ceiling}
- F21V 21/06 . Bases for movable standing lamps; Fixing standards to the bases ([F21V 21/08 takes precedence](#))
- F21V 21/08 . Devices for easy attachment to any desired place, e.g. clip, clamp, magnet
- F21V 21/0808 . . {Adhesive means}
- F21V 21/0816 . . {Strap fasteners, e.g. fasteners with a buckle}
- F21V 21/0824 . . {Ground spikes}
- F21V 21/0832 . . {Hook and loop-type fasteners}
- F21V 21/084 . . Head fittings
- F21V 21/088 . . Clips; Clamps
- F21V 21/0885 . . . {for portable lighting devices}
- F21V 21/092 . . Suction devices
- F21V 21/0925 . . . {for portable lighting devices}
- F21V 21/096 . . Magnetic devices
- F21V 21/0965 . . . {for portable lighting devices}
- F21V 21/10 . Pendants, arms, or standards; Fixing lighting devices to pendants, arms, or standards ([adjustable mounting F21V 21/14](#); [construction of posts not peculiar to use with lighting devices E04H 12/00](#))
- F21V 21/104 . . Pendants
- F21V 21/108 . . Arms
- F21V 21/112 . . Fixing lighting devices to pendants ([F21V 21/002 takes precedence](#))
- F21V 21/116 . . Fixing lighting devices to arms or standards ([F21V 21/002 takes precedence](#))
- F21V 21/12 . . capable of being elongated or shortened by the insertion or removal of intermediate pieces
- F21V 21/13 . Spring-loaded poles fixed at both ends
- F21V 21/14 . Adjustable mountings
- F21V 21/145 . . {for portable lighting devices}
- F21V 21/15 . . specially adapted for power operation, e.g. by remote control
- F21V 21/16 . . using wires or cords
- F21V 21/18 . . . operated by springs
- F21V 21/20 . . . operated by weights
- F21V 21/22 . . telescopic
- F21V 21/24 . . Lazy-tongs
- F21V 21/26 . . Pivoted arms
- F21V 21/28 . . . adjustable in more than one plane
- F21V 21/29 employing universal joints
- F21V 21/30 . . Pivoted housings or frames
- F21V 21/32 . . Flexible tubes

- F21V 21/34
 - Supporting elements displaceable along a guiding element [{\(telescopic mounting of lighting devices F21V 21/22\)}](#)
- F21V 21/35
 - • with direct electrical contact between the supporting element and electric conductors running along the guiding element
- F21V 21/36
 - Hoisting or lowering devices, e.g. for maintenance
- F21V 21/38
 - • with a cable
- F21V 21/40
 - Hand grips
- F21V 21/403
 - • [{for operation or dentist lamps}](#)
- F21V 21/406
 - • [{for portable lighting devices}](#)

- F21V 23/00**
 - Arrangement of electric circuit elements in or on lighting devices**
[{\(characterised by cooling arrangements F21V 29/508\)}](#)
- F21V 23/001
 - [{the elements being electrical wires or cables}](#)
- F21V 23/002
 - • [{Arrangements of cables or conductors inside a lighting device, e.g. means for guiding along parts of the housing or in a pivoting arm}](#)
- F21V 23/003
 - [{the elements being electronics drivers or controllers for operating the light source, e.g. for a LED array}](#)
- F21V 23/004
 - • [{arranged on a substrate, e.g. a printed circuit board}](#)
- F21V 23/005
 - • • [{the substrate is supporting also the light source}](#)
- F21V 23/006
 - • • [{the substrate being distinct from the light source holder}](#)
- F21V 23/007
 - • [{enclosed in a casing}](#)
- F21V 23/008
 - • • [{the casing being outside the housing of the lighting device}](#)
- F21V 23/009
 - • • [{the casing being inside the housing of the lighting device}](#)
- F21V 23/02
 - the elements being transformers, impedances [{or power supply units, e.g. a transformer with a rectifier}](#)
- F21V 23/023
 - • [{Power supplies in a casing \(F21V 23/003 takes precedence\)}](#)
- F21V 23/026
 - • [{Fastening of transformers or ballasts}](#)
- F21V 23/04
 - the elements being switches [\(safety devices F21V 25/00\)](#)
- F21V 23/0407
 - • [{for flashing}](#)
- F21V 23/0414
 - • [{specially adapted to be used with portable lighting devices}](#)
- F21V 23/0421
 - • • [{the switch being part of, or disposed on the tail cap portion thereof}](#)
- F21V 23/0428
 - • • [{the switch being part of, or disposed on the lamp head portion thereof}](#)
- F21V 23/0435
 - • [{activated by remote control means}](#)
- F21V 23/0442
 - • [{activated by means of a sensor, e.g. motion or photodetectors}](#)
- F21V 23/045
 - • • [{the sensor receiving a signal from a remote controller}](#)
- F21V 23/0457
 - • • [{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}](#)
- F21V 23/0464
 - • • [{the sensor sensing the level of ambient illumination, e.g. dawn or dusk sensors}](#)
- F21V 23/0471
 - • • [{the sensor detecting the proximity, the presence or the movement of an object or a person}](#)
- F21V 23/0478
 - • • • [{by means of an image recording device, e.g. a camera}](#)

- F21V 23/0485 . . . {the sensor sensing the physical interaction between a user and certain areas located on the lighting device, e.g. a touch sensor}
- F21V 23/0492 . . . {the sensor detecting a change in orientation, a movement or an acceleration of the lighting device, e.g. a tilt switch}
- F21V 23/06 . the elements being coupling devices, {e.g. connectors}

F21V 25/00 **Safety devices structurally associated with lighting devices** (gas- tight or water-tight arrangements [F21V 31/00](#); in general [F16P](#); protective circuit arrangements per se [H02H 7/00](#))

- F21V 25/02 . coming into action when lighting device is disturbed, dismounted, or broken
- F21V 25/04 . . breaking the electric circuit
- F21V 25/06 . . feeding a quenching fluid to the light source
- F21V 25/08 . . cutting the incandescent filament
- F21V 25/10 . coming into action when lighting device is overloaded, e.g. thermal switch
- F21V 25/12 . Flame-proof or explosion-proof arrangements
- F21V 25/125 . . {using intumescent material, i.e. using materials which swells up as a result of heat exposure}

F21V 27/00 **Cable-stowing arrangements structurally associated with lighting devices, e.g. reels** (storing lengths of cable in general [B65H](#) {the lighting devices being vehicle headlamps [F21S 48/1109](#); the lighting devices being vehicle lights [F21S 48/212](#)})

- F21V 27/005 . {for portable lighting devices}
- F21V 27/02 . Cable inlets

F21V 29/00 **Protecting lighting devices from thermal damage; Cooling or heating arrangements specially adapted for lighting devices or systems** (lighting fixtures combined with outlets for air-treatment systems [F24F 13/078](#))

WARNING

Groups [F21V 29/002](#) - [F21V 29/006](#), [F21V 29/02](#), [F21V 29/20](#), [F21V 29/2212](#), [F21V 29/30](#), [F21V 29/40](#), and [F21V 29/402](#) are no longer used for the classification of documents as of January 15, 2015. The backfile of these groups is being reclassified into groups [F21V 29/002](#) - [F21V 29/89](#).

Until reclassification is complete, groups [F21V 29/002](#) - [F21V 29/006](#) and [F21V 29/02](#), [F21V 29/20](#), [F21V 29/2212](#), [F21V 29/30](#), [F21V 29/40](#), and [F21V 29/402](#) should be considered in order to perform a complete search.

- F21V 29/002 . {Cooling arrangements ([F21V 29/02](#) takes precedence)}

(Frozen)

WARNING

Group [F21V 29/002](#) is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/00](#) - [F21V 29/89](#).

Until reclassification is complete, group [F21V 29/002](#) should also be considered in order to perform a complete search.

F21V 29/004
(Frozen)

- • {Natural cooling, i.e. by natural convection, conduction or radiation}

WARNING

Group [F21V 29/004](#) is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/00](#) - [F21V 29/89](#).

Until reclassification is complete, group [F21V 29/004](#) should also be considered in order to perform a complete search.

F21V 29/006
(Frozen)

- • {Cooling devices or systems using condensation or evaporation of a fluid, e.g. heat pipes or two phase cooling systems}

WARNING

Group [F21V 29/006](#) is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/51](#) and [F21V 29/52](#).

Until reclassification is complete, groups [F21V 29/006](#), [F21V 29/51](#) and [F21V 29/52](#) should also be considered in order to perform a complete search.

F21V 29/02
(Frozen)

- • Cooling by forcing air {or gas} over or around the light source (cooling arrangements structurally associated with electric {discharge or incandescent} lamps [H01J 61/52](#), [H01K 1/58](#))

WARNING

Group [F21V 29/02](#) is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/503](#), and [F21V 29/60](#) - [F21V 29/89](#).

Until reclassification is complete, group [F21V 29/02](#) should also be considered in order to perform a complete search.

F21V 29/10

- • Arrangement of heat-generating components to reduce thermal damage, e.g. by distancing heat-generating components from other components to be protected

WARNING

Group [F21V 29/10](#) is incomplete pending reclassification of documents from groups [F21V 29/002](#), [F21V 29/004](#) and [F21V 29/02](#).

Until reclassification is complete, groups [F21V 29/002](#), [F21V 29/004](#) and [F21V 29/02](#) should also be considered in order to perform a complete search.

F21V 29/15
F21V 29/20
(Frozen)

- Thermal insulation
- {Cooling devices, cooling systems or arrangements thereof}

WARNING

Group [F21V 29/20](#) is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/00](#) - [F21V 29/89](#).

Until reclassification is complete, group [F21V 29/20](#) should also be considered in order to perform a complete search.

F21V 29/2212
(Frozen)

- . . {the fins or blades being planar}

WARNING

Group [F21V 29/2212](#) is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/76](#) - [F21V 29/78](#).

Until reclassification is complete, group [F21V 29/2212](#) should also be considered in order to perform a complete search.

F21V 29/30
(Frozen)

- . {Forced cooling using liquids, e.g. water}

WARNING

Group [F21V 29/30](#) is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/56](#) - [F21V 29/59](#).

Until reclassification is complete, groups [F21V 29/30](#) should also be considered in order to perform a complete search.

F21V 29/40
(Frozen)

- . {Forced cooling by electrically-powered actuators (fans [F21V29/025](#))}

WARNING

Groups [F21V 29/40](#) and [F21V 29/402](#) are no longer used for the classification of documents as of January 15, 2015. The backfile of these groups is being reclassified into groups [F21V 29/51](#) - [F21V 29/677](#).

Until reclassification is complete, groups [F21V 29/40](#) and [F21V 29/402](#) should also be considered in order to perform a complete search.

F21V 29/402
(Frozen)

- . . {Multi-phase cooling systems actuated by pumps}

F21V 29/50

- . Cooling arrangements (air-treatment systems dissipating or using the heat of lighting fixtures [F24F 3/056](#))

WARNING

Groups [F21V 29/50](#) - [F21V 29/503](#) are incomplete pending reclassification of documents from groups [F21V 29/002](#), [F21V 29/004](#), and [F21V 29/02](#).

Until reclassification is complete, groups [F21V 29/002](#), [F21V 29/004](#), and [F21V 29/02](#) should also be considered in order to perform a complete search.

F21V 29/502

- . . characterised by the adaption for cooling of specific components

F21V 29/503

- . . . of light sources (cooling arrangements structurally associated with gas-discharge or vapour-discharge lamps [H01J 61/52](#); cooling arrangements structurally associated with electric incandescent lamps [H01K 1/58](#); cooling arrangements structurally associated with light-emitting diodes [H01L 33/64](#))

F21V 29/504

- . . . of refractors

F21V 29/505

- . . . of reflectors

F21V 29/506

- . . . of globes, bowls or cover glasses

F21V 29/507

- . . . of means for protecting lighting devices from damage, e.g. housings

F21V 29/508

- . . . of electrical circuits

F21V 29/51

- using condensation or evaporation of a fluid, e.g. heat pipes

WARNING

Groups [F21V 29/51](#) - [F21V 29/52](#) are incomplete pending reclassification of documents from groups [F21V 29/006](#), [F21V 29/40](#), and [F21V 29/402](#).

Until reclassification is complete, groups [F21V 29/006](#), [F21V 29/40](#) and [F21V 29/402](#) should also be considered in order to perform a complete search.

F21V 29/52

- electrically powered, e.g. refrigeration systems

F21V 29/54

- using thermoelectric means, e.g. Peltier elements

WARNING

Group [F21V 29/54](#) is incomplete pending reclassification of documents from groups [F21V 29/40](#) and [F21V 29/402](#).

Until reclassification is complete, groups [F21V 29/40](#) and [F21V 29/402](#) should also be considered in order to perform a complete search.

F21V 29/56

- using liquid coolants ([F21V 29/51](#) takes precedence)

WARNING

Groups [F21V 29/56](#) - [F21V 29/59](#) are incomplete pending reclassification of documents from groups [F21V 29/30](#), [F21V 29/40](#) and [F21V 29/402](#)

Until reclassification is complete, groups [F21V 29/30](#), [F21V 29/40](#) and [F21V 29/402](#) should also be considered in order to perform a complete search.

F21V 29/57

- characterised by control arrangements

F21V 29/58

- characterised by the coolants

F21V 29/59

- {with forced flow of the coolant}

F21V 29/60

- characterised by the use of a forced flow of gas, e.g. air

WARNING

Groups [F21V 29/60](#) - [F21V 29/677](#) are incomplete pending reclassification of documents from groups [F21V 29/02](#), [F21V 29/40](#) and [F21V 29/402](#)

Until reclassification is complete, groups [F21V 29/02](#), [F21V 29/40](#) and [F21V 29/402](#) should also be considered in order to perform a complete search.

F21V 29/61

- characterised by control arrangements

F21V 29/63

- using electrically-powered vibrating means; using ionic wind

F21V 29/65

- the gas flowing in a closed circuit

F21V 29/67

- characterised by the arrangement of fans

F21V 29/673

- {the fans being used for intake}

F21V 29/677

- {the fans being used for discharging}

- F21V 29/70 . . characterised by passive heat-dissipating elements, e.g. heat-sinks

WARNING

Groups [F21V 29/70](#) - [F21V 29/83](#) are incomplete pending reclassification of documents from group [F21V 29/02](#).

Until reclassification is complete, group [F21V 29/02](#) should be considered in order to perform a complete search.

- F21V 29/71 . . . using a combination of separate elements interconnected by heat-conducting means, e.g. with heat pipes or thermally conductive bars between separate heat-sink elements

- F21V 29/713 {in direct thermal and mechanical contact of each other to form a single system}

- F21V 29/717 {using split or remote units thermally interconnected, e.g. by thermally conductive bars or heat pipes}

- F21V 29/73 . . . the elements being adjustable with respect to each other, e.g. hinged

- F21V 29/74 . . . with fins or blades

- F21V 29/745 {the fins or blades being planar and inclined with respect to the joining surface from which the fins or blades extend}

- F21V 29/75 with fins or blades having different shapes, thicknesses or spacing

- F21V 29/76 with essentially identical parallel planar fins or blades, e.g. with comb-like cross-section

WARNING

Groups [F21V 29/76](#) - [F21V 29/767](#) are incomplete pending reclassification of documents from group [F21V 29/2212](#).

Until reclassification is complete, group [F21V 29/2212](#) should also be considered in order to perform a complete search.

- F21V 29/763 {the planes containing the fins or blades having the direction of the light emitting axis}

- F21V 29/767 {the planes containing the fins or blades having directions perpendicular to the light emitting axis}

- F21V 29/77 with essentially identical diverging planar fins or blades, e.g. with fan-like or star-like cross-section

WARNING

Groups [F21V 29/77](#) - [F21V 29/777](#) are incomplete pending reclassification of documents from group [F21V 29/2212](#).

Until reclassification is complete, group [F21V 29/2212](#) should also be considered in order to perform a complete search.

- F21V 29/773 {the planes containing the fins or blades having the direction of the light emitting axis}

- F21V 29/777 {the planes containing the fins or blades having directions perpendicular to the light emitting axis}

- F21V 29/78 with helically or spirally arranged fins or blades

WARNING

Group [F21V 29/78](#) is incomplete pending reclassification of documents from group [F21V 29/2212](#).

Until reclassification is complete, group [F21V 29/2212](#) should also be considered in order to perform a complete search.

- F21V 29/80 . . . with pins or wires

- F21V 29/81 with pins or wires having different shapes, lengths or spacing

- F21V 29/83 . . . the elements having apertures, ducts or channels, e.g. heat radiation holes

- F21V 29/85 . characterised by the material (liquid coolants [F21V 29/56](#))

WARNING

Groups [F21V 29/85](#) - [F21V 29/89](#) are incomplete pending reclassification of documents from group [F21V 29/02](#).

Until reclassification is complete, group [F21V 29/02](#) should also be considered in order to perform a complete search.

- F21V 29/86 . . {Ceramics or glass}

- F21V 29/87 . . Organic material, e.g. filled polymer composites; Thermo-conductive additives or coatings therefor

- F21V 29/89 . . Metals

- F21V 29/90 . Heating arrangements

F21V 31/00 Gas-tight or water-tight arrangements

- F21V 31/005 . {Sealing arrangements therefor}

- F21V 31/03 . with provision for venting {(for vehicle head lights [F21S 48/335](#); for vehicle rear lights [F21S 48/337](#))}

- F21V 31/04 . Provision of filling media

F21V 33/00 Structural combinations of lighting devices with other articles, not otherwise provided for

- F21V 33/0004 . {Personal or domestic articles}

- F21V 33/0008 . . {Clothing or clothing accessories, e.g. scarfs, gloves or belts}

- F21V 33/0012 . . {Furniture (hospital beds [F21V 33/0072](#))}

- F21V 33/0016 . . . {Furnishing for windows and doors (sunshades [F21V 33/006](#))}

- F21V 33/002 . . . {Racks for compact discs or the like}

- F21V 33/0024 . . {Household or table equipment}

- F21V 33/0028 . . . {Decorative household equipment, e.g. plant holders or food dummies}

- F21V 33/0032 {Paintings, pictures or photographs; Frames therefor}

- F21V 33/0036 . . . {Table-ware or table equipment, e.g. dishes, cutlery or trays}

- F21V 33/004 . . {Sanitary equipment, e.g. mirrors, showers, toilet seats or paper dispensers}

- F21V 33/0044 . . {Household appliances, e.g. washing machines or vacuum cleaners}

- F21V 33/0048 . . {Office articles, e.g. bookmarks, desk lamps with drawers, stands for books or music scores}
- F21V 33/0052 . . {Audio or video equipment, e.g. televisions, telephones, cameras or computers; Remote control devices therefor}
- F21V 33/0056 . . . {Audio equipment, e.g. music instruments, radios or speakers}
- F21V 33/006 . {General building constructions or finishing work for buildings, e.g. roofs, gutters, stairs or floors; Garden equipment; Sunshades or parasols}
- F21V 33/0064 . {Health, life-saving or fire-fighting equipment}
- F21V 33/0068 . . {Medical equipment}
- F21V 33/0072 . . . {Hospital beds}
- F21V 33/0076 . . {Safety or security signalisation, e.g. smoke or burglar alarms, earthquake detectors; Self-defence devices}
- F21V 33/008 . {Leisure, hobby or sport articles, e.g. toys, games or first-aid kits; Hand tools; Toolboxes}
- F21V 33/0084 . . {Hand tools; Toolboxes}
- F21V 33/0088 . {Ventilating systems (lighting fixtures combined with outlets for air treatment systems [F24F 13/078](#))}
- F21V 33/0092 . . {with heating or cooling devices}
- F21V 33/0096 . . {Fans, e.g. ceiling fans (forced cooling of lighting devices characterised by the arrangement of fans [F21V 29/67](#))}

F21V 35/00**Candle holders**

- F21V 35/003 . {Special means for attaching the candle to the candle holder}
- F21V 35/006 . {Drop catchers; Shade holders}

F21V 36/00**Arrangements of mantles or other incandescent bodies on burners**

- F21V 36/02 . in ceiling lamps

F21V 37/00**Details of lighting devices employing combustion as light source, not otherwise provided for; Night lamps; Votive lamps**

- F21V 37/0004 . {using liquid fuel}
- F21V 37/0008 . . {Fuel containers}
- F21V 37/0012 . . . {Filling or level checking}
- F21V 37/0016 . . . {Fastening of the container to other parts of the lamp}
- F21V 37/002 . . {Wicks}
- F21V 37/0025 . . . {vegetal ([F21V 37/0033](#) takes precedence)}
- F21V 37/0029 . . . {mineral ([F21V 37/0033](#) takes precedence)}
- F21V 37/0033 . . . {combination of vegetal and mineral}
- F21V 37/0037 . . . {Cleaning devices}
- F21V 37/0041 . . {Fuel supply}
- F21V 37/0045 . . . {using hydrostatic pressure or weights}
- F21V 37/005 . . . {using air or gas pressure}
- F21V 37/0054 . . . {Controlling means, e.g. floaters}

- F21V 37/0058 . . {Reflectors, cover glasses, chimneys; Smoke-removing devices; Preheaters}
- F21V 37/0062 . . . {Reflectors}
- F21V 37/0066 . . . {Chimneys}
- F21V 37/007 . . . {Globs}
- F21V 37/0075 . . {Fastening or safety devices for reflectors, cover glasses or chimneys}
- F21V 37/0079 . . . {Fastening of chimneys ([F21V 37/0087](#) takes precedence)}
- F21V 37/0083 . . . {Fastening of cover glasses ([F21V 37/0087](#) takes precedence)}
- F21V 37/0087 . . . {Devices for lifting chimneys or cover glasses}
- F21V 37/0091 . . . {Protections against shocks}
- F21V 37/0095 . {Night lamps; Votive lamps}
- F21V 37/02 . Special adaptation for protection against draughts {(for lanterns [F21L 19/006](#));
Draft controllers}

F21V 99/00 **Subject matter not provided for in other groups of this subclass**

F21V 2200/00 **Use of light guides, e.g. fibre optic devices, in lighting devices or systems**

- F21V 2200/10 . of light guides of the optical fibres type
- F21V 2200/13 . . the light being emitted at the end of the guide
- F21V 2200/15 . . the light being emitted along at least a portion of the outer surface of the guide
- F21V 2200/17 . . characterised by the admission of light into the guide
- F21V 2200/20 . of light guides of a generally planar shape
- F21V 2200/30 . of light guides doped with fluorescent agents
- F21V 2200/40 . of hollow light guides