CPC COOPERATIVE PATENT CLASSIFICATION

F21V DETAILS OF LIGHTING DEVICES, OF GENERAL APPLICATION

NOTE

1. Groups F21V 1/00-F21V 14/00 cover details of those parts involved in light emission or distribution. Groups F21V 15/00-F21V 31/00 cover details of those parts not so involved.
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.

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.

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 6/00L`

Guidance heading: **Details of those parts involved in light emission or distribution** (optical elements and systems in general G02B)

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)

F21V 3/005 . { being designed to facilitate cooling }

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** { (for vehicle rear lights F21S 48/2212; for vehicle head lamps F21S 48/1225) }

F21V 5/001 . { being designed to facilitate cooling }

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** { (for vehicle rear lights F21S 48/23; for vehicle head lamps F21S 48/1317) }

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 to 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 7/22 takes precedence)

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 7/22 takes precedence)

F21V 7/16 . . with provision for adjusting the curvature

F21V 7/18 . . with provision for folding or collapsing

F21V 7/20 . . constructed to facilitate cooling, e.g. with fins (cooling by other means, e.g. fluid, F21V 29/00)

F21V 7/22 . characterised by the material; characterised by surface treatments or coatings

F21V 9/00 **Light filters** (coloured shades F21V 1/00) **; Selection of luminescent materials for light screens** (luminescent materials per se C09K 11/00; electroluminescent light sources H05B 33/00)

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 . . with liquid-filled chambers

F21V 9/14 . for producing polarised light

F21V 9/16 . 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**

F21V 11/02 . using parallel laminae or strips, e.g. of Venetian-blind type (F21V 11/06 takes precedence)

F21V 11/04 . . adjustable

F21V 11/06 . using crossed laminae or strips, { e.g. grid-shaped louvers }; using lattices or honeycombs

F21V 11/065 . . { adjustable }

F21V 11/08 . using diaphragms containing one or more apertures

F21V 11/10 . . of iris type

F21V 11/12 . . of slot type

F21V 11/14 . . with many small apertures

F21V 11/16 . using sheets without apertures, { i.e. masks for shielding light, }e.g. fixed (F21V 11/02, F21V 11/06 take precedence; { for vehicle head lamps F21S 48/145 })

F21V 11/18 . . movable, e.g. flaps, slides

F21V 11/183 . . . { pivotable }

F21V 11/186 . . . { 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 . Combinations of only two kinds of elements

F21V 13/04 . . the elements being reflectors and refractors { (for vehicle rear lights F21S 48/24) }

F21V 13/045 . . . {for portable lighting devices }

F21V 13/06 . . . a reflector being rotatable

F21V 13/08 . . the elements being reflectors and filters

F21V 13/10 . . the elements being reflectors and screens

F21V 13/12 . Combinations of only three kinds of elements

F21V 13/14 . . 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 iris-type diaphragms F21V 11/10; 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 }

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

F21V 15/00 **Protecting lighting devices from damage [** (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 })

WARNING

Not complete, see F21V 15/00

F21V 15/011 . . { being designed to facilitate cooling }

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

WARNING

Not complete, see F21V 15/00

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 15/06 . Thermal insulation { (for vehicle head lamps F21S 48/32) }

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; gas-tight or water-tight arrangements F21V 31/00; { for vehicle rear lights F21S 48/20; for vehicle head lights F21S 48/10 })

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 17/06, {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

WARNING

Not complete, see F21V 17/00

F21V 17/10	.	characterised by specific fastening means or way of fastening (F21V 17/02 to 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 semiconductors 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 . Attaching mantles or other incandescent bodies to lamp parts

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

WARNING

Not complete, see F21V 21/00

F21V 21/008 . Suspending from a cable or suspension line

WARNING

Not complete, see F21V 21/00

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 (for medical purposes A61B 1/06 { hats or helmets with lamps A42B 3/044 })

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

WARNING

Not complete, see F21V 21/10

F21V 21/108 .. Arms

WARNING

Not complete, see F21V 21/10

F21V 21/112 .. Fixing lighting devices to pendants (F21V 21/002 takes precedence)

WARNING

Not complete, see F21V 21/10

F21V 21/116 . . Fixing lighting devices to arms or standards (F21V 21/002 takes precedence)

WARNING

Not complete, see F21V 21/10

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

WARNING

Not complete, see F21V 21/00

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

WARNING

Not complete, see F21V 21/14

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

WARNING

Not complete, see F21V 21/34

F21V 21/36 . Hoisting or lowering devices, e.g. for maintenance (F21V 21/14 takes precedence)

F21V 21/38 . . with a cable

F21V 21/40 . Hand grips

WARNING

Not complete, see F21V 21/00

F21V 21/403 . . {for operation or dentist lamps }

F21V 21/406 . . {for portable lighting devices }

F21V 23/00 **Arrangements of electric circuit elements in or on lighting devices** (electric circuits per se H05B 39/00)

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 generalB65H) { 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

WARNING

Not complete, see F21V 27/00

F21V 29/00 **Cooling or heating arrangements** (reflectors specially adapted for cooling F21V 7/20; cooling of air-treatment systems with air-flow over lighting fixtures F24F 3/056; lighting fixtures combined with outlets for air-treatment systems F24F 13/078; cooling of projectors G03B 21/16 { cooling of lighting devices or systems specially adapted for vehicles F21S 48/32 })

WARNING

Groups F21V 29/20 to F21V 29/40 do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows:
F21V 29/20-F21V 29/40 : F21V 29/00

F21V 29/002 . { Cooling arrangements (F21V 29/02 takes precedence) }

F21V 29/004 . . { Natural cooling, i.e. by natural convection, conduction or radiation }

F21V 29/006 . . { Cooling devices or systems using condensation or evaporation of a fluid, e.g. heat pipes or two phase cooling systems }

F21V 29/008 . { Heating arrangements (heating arrangements structurally associated with electric

lamps H01J 61/52) }

WARNING

not complete, see F21S 48/335, F21V 29/00

F21V 29/02	.	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)
F21V 29/022	..	{ wherein the circuit for air or gas circulation is a closed cavity }
F21V 29/025	..	{ using fans for intake }
F21V 29/027	..	{ using fans for discharging }
F21V 29/20	.	{ Cooling devices, cooling systems or arrangements thereof }
F21V 29/22	..	{ being heatsinks with heat dissipating means }
F21V 29/2206	...	{ the heat dissipating means being fins or blades }
F21V 29/2212	....	{ the fins or blades being planar }
F21V 29/2218	.....	{ the planes being inclined with respect to the joining surfaces of the heatsinks }
F21V 29/2225	.....	{ the planes converging with planes of other planar fins or blades }
F21V 29/2231	.....	{ the axis of convergence having the same direction as the emitted light axis }
F21V 29/2237	.....	{ the axis of convergence being perpendicular to the emitted light axis }
F21V 29/2243	.....	{ in parallel arrangement with another plane containing the fins or blades, e.g. pectinated fins }
F21V 29/225	.....	{ the planes being parallel to the emitted light axis }
F21V 29/2256	.....	{ the planes being perpendicular to the emitted light axis }
F21V 29/2262	....	{ 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 }
F21V 29/2268	....	{ the fins or blades being wrapped around an axis, e.g. as spiral fins, helical fins or fins wrapped around the emitted light axis }
F21V 29/2275	...	{ the heat dissipating means being wire-like or pin-like cooling means }
F21V 29/2281	....	{ being inclined with respect to the joining surfaces of the heatsink }
F21V 29/2287	....	{ 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 }
F21V 29/2293	...	{ the heat sink having an arrangement of apertures, ducts or channels; the ducts or channels being in the body of the heatsink }
F21V 29/24	..	{ characterised by the selection of materials or liquid for the cooling device }
F21V 29/242	...	{ Ceramics or glass }
F21V 29/244	...	{ Organics with or without thermo-conductive additives or coatings, e.g. filled polymer composites or with additives using nano particles }
F21V 29/246	...	{ Metals }

F21V 29/248 . . . { Cooling liquids }
F21V 29/26 . . { Cooling with an arrangement of a plurality of heatsink units }
F21V 29/262 . . . { in direct thermal and mechanical contact to each other to form a single system }
F21V 29/265 . . . { using split and remote units thermally interconnected, e.g. by thermally conductive bars or heat pipes }
F21V 29/267 . . . { the units being adjustable with respect to each other, e.g. hinged heatsink units }

F21V 29/30 . { Forced cooling using liquids, e.g. water }

F21V 29/40 . { Forced cooling by electrically-powered actuators (fans F21V 29/025) }
F21V 29/402 . . { Multi-phase cooling systems actuated by pumps }
F21V 29/405 . . { Cooling systems using a fluid actuated by vibrating means or using a ionic wind }
F21V 29/407 . . { Cooling systems using the Peltier effect }

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 (safety devices F21V 25/00; cooling arrangements F21V 29/00)

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 for lighting devices F21V 29/02) }

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** (attaching to lamp parts F21V 19/06)

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**

Guidance heading:

F21V 2008/00 **Use of light guides, e.g. fibre optic devices, in lighting devices or systems**

F21V 2008/001 . of light guides of the optical fibres type

F21V 2008/002 . . the light being emitted at the end of the guide

F21V 2008/003 . . the light being emitted along at least a portion of the outer surface of the guide

F21V 2008/005 . . characterised by the admission of light into the guide

F21V 2008/006 . of light guides of a generally planar shape

F21V 2008/007 . of light guides doped with fluorescent agents

F21V 2008/008 . of hollow light guides

Guidance heading:

F21V 2009/00 **Light filters** (coloured shades F21V 1/00) **; Selection of luminescent materials for light screens** (luminescent materials per se C09K 11/00; electroluminescent light sources H05B 33/00)

F21V 2009/08 . for producing coloured light, e.g. monochromatic; for reducing intensity of light (F21V 9/16 takes precedence)

F21V 2009/086 . . for vehicle rear lights