

# CPC COOPERATIVE PATENT CLASSIFICATION

## F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

### LIGHTING; HEATING

#### F21 LIGHTING (NOTE omitted)

#### F21S NON-PORTABLE LIGHTING DEVICES; SYSTEMS THEREOF; VEHICLE LIGHTING DEVICES SPECIALLY ADAPTED FOR VEHICLE EXTERIORS

##### NOTES

1. This subclass covers:
  - devices or systems intended for fixed installation or for use at a permanent location, e.g. free-standing floor- or table-lamps.
  - aspects related to the optical, mechanical, thermal or electrical arrangement of elements in vehicle illuminating devices specially adapted for vehicle exterior, e.g. headlamps.
  - aspects related to the optical, mechanical, thermal or electrical arrangement of elements in vehicle light signalling devices specially adapted for vehicle exterior, e.g. brake lamps or direction indicator lights.
2. This subclass does not cover:
  - devices or systems specially adapted for transportation, which are covered by subclass [F21L](#).
  - aspects related to the vehicles in which lighting devices are arranged, e.g. the arrangement or operation of lighting devices on vehicles, which are covered by [B60Q](#).
  - control of vehicle lighting devices in relation to the vehicle as a whole, e.g. for levelling, swivelling or aiming. Such arrangements are covered by group [B60Q 1/06](#), even if the movement of the lighting device occurs inside the lamp housing.
3. Non-electric lighting devices or systems are classified in groups [F21S 11/00](#) - [F21S 15/00](#) only if a special adaptation related to the use of a non-electric light source is of interest.
4. In this subclass, it is desirable to add the indexing codes of subclasses [F21W](#) and [F21Y](#).

##### WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

##### Electric lighting

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| <p><b>2/00</b> Systems of lighting devices, not provided for in main groups <a href="#">F21S 4/00</a> - <a href="#">F21S 10/00</a> or <a href="#">F21S 19/00</a>, e.g. of modular construction</p> <p>2/005 . {of modular construction}</p> <p><b>4/00</b> Lighting devices or systems using a string or strip of light sources</p> <p>4/10 . with light sources attached to loose electric cables, e.g. Christmas tree lights</p> <p>4/15 . . the cables forming a grid, net or web structure</p> <p>4/20 . with light sources held by or within elongate supports</p> <p>4/22 . . flexible or deformable, e.g. into a curved shape</p> <p>4/24 . . . of ribbon or tape form, e.g. LED tapes</p> <p>4/26 . . . of rope form, e.g. LED lighting ropes, or of tubular form</p> <p>4/28 . . rigid, e.g. LED bars</p> <p><b>6/00</b> Lighting devices intended to be free-standing<br/>(<a href="#">F21S 9/00</a>, <a href="#">F21S 10/00</a>, {<a href="#">F21S 13/12</a>} take precedence {lighting devices specially adapted to be transported from place to place, e.g. lighting devices carried on wheeled supports <a href="#">F21L</a>; details of supports for lighting devices <a href="#">F21V 21/00</a>})</p> | <p>6/001 . {being candle-shaped (with varying lighting effect of simulating flames <a href="#">F21S 10/04</a>; string of light sources <a href="#">F21S 4/00</a>)}</p> <p>6/002 . {Table lamps, e.g. for ambient lighting}</p> <p>6/003 . . {for task lighting, e.g. for reading or desk work, e.g. angle poise lamps}</p> <p>6/004 . {with a lamp housing in direct contact with the floor or ground}</p> <p>6/005 . {with a lamp housing maintained at a distance from the floor or ground via a support, e.g. standing lamp for ambient lighting}</p> <p>6/006 . . {for direct lighting only, e.g. task lighting}</p> <p>6/007 . . {for indirect lighting only, e.g. torchiere with reflector bowl directed towards ceiling}</p> <p>6/008 . . {with a combination of direct and indirect lighting}</p> <p><b>8/00</b> Lighting devices intended for fixed installation<br/>(<a href="#">F21S 9/00</a>, <a href="#">F21S 10/00</a> take precedence; using a string or strip of light sources <a href="#">F21S 4/00</a>)</p> <p>8/003 . {Searchlights, i.e. outdoor lighting device producing powerful beam of parallel rays, e.g. for military or attraction purposes (searchlights mounted on a vehicle <a href="#">B60Q 1/24</a>)}</p> |
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8/006	• {Solar simulators, e.g. for testing photovoltaic panels}	9/02	• the power supply being a battery or accumulator
8/02	• of recess-mounted type, e.g. downlighters (specially adapted for vehicle exteriors <a href="#">F21S 41/00-F21S 45/00</a> )	9/022	• • {Emergency lighting devices}
8/022	• • {intended to be recessed in a floor or like ground surface, e.g. pavement or false floor}	9/024	• • • {using a supplementary light source for emergency lighting}
8/024	• • {intended to be recessed in a wall or like vertical structure, e.g. building facade}	9/026	• • {rechargeable by using wind power, e.g. using wind turbines}
8/026	• • {intended to be recessed in a ceiling or like overhead structure, e.g. suspended ceiling}	9/028	• • {rechargeable by using hydropower, e.g. using water powered turbines}
8/028	• • {being retractable, i.e. having two fixed positions, one recessed, e.g. in a wall, floor or ceiling, and one extended when in use}	9/03	• • rechargeable by exposure to light
8/03	• {of surface-mounted type ( <a href="#">F21S 8/02</a> , <a href="#">F21S 8/04</a> take precedence; details of wall or floor bases <a href="#">F21V 21/02</a> )}	9/032	• • • {the solar unit being separate from the lighting unit}
8/031	• • {the device consisting essentially only of a light source holder with an exposed light source, e.g. a fluorescent tube}	9/035	• • • {the solar unit being integrated within the support for the lighting unit, e.g. within or on a pole}
8/032	• • {the surface being a floor or like ground surface, e.g. pavement}	9/037	• • • {the solar unit and the lighting unit being located within or on the same housing}
8/033	• • {the surface being a wall or like vertical structure, e.g. building facade}	9/04	• the power supply being a generator
8/035	• • • {by means of plugging into a wall outlet, e.g. night light}	9/043	• • {driven by wind power, e.g. by wind turbines}
8/036	• • • {by means of a rigid support, e.g. bracket or arm}	9/046	• • {driven by hydropower, e.g. by water powered turbines}
8/037	• • • {for mounting in a corner, i.e. between adjacent walls or wall and ceiling}	<b>10/00</b>	<b>Lighting devices or systems producing a varying lighting effect</b>
8/038	• • {intended to be mounted on a light track (suspended from a light track <a href="#">F21S 8/066</a> ; details of supporting elements displaceable along a guiding element <a href="#">F21V 21/34</a> )}	10/002	• {using liquids, e.g. water ( <a href="#">F21W 2121/02</a> takes precedence)}
8/04	• intended only for mounting on a ceiling or the like overhead structures ( <a href="#">F21S 8/02</a> takes precedence; {details of ceiling bases <a href="#">F21V 21/03</a> })	10/005	• {using light guides (light guides specially adapted for lighting devices <a href="#">G02B 6/0001</a> )}
8/043	• • {mounted by means of a rigid support, e.g. bracket or arm}	10/007	• {using rotating transparent or colored disks, e.g. gobo wheels}
8/046	• • {having multiple lighting devices, e.g. connected to a common ceiling base}	10/02	• changing colors {( <a href="#">F21S 10/002</a> - <a href="#">F21S 10/007</a> , <a href="#">F21S 10/04</a> take precedence)}
8/06	• • by suspension	10/023	• • {by selectively switching fixed light sources}
8/061	• • • {with a non-rigid pendant, i.e. a cable, wire or chain}	10/026	• • {by movement of parts, e.g. by movement of reflectors or light sources ( <a href="#">F21S 10/007</a> takes precedence)}
8/063	• • • {with a rigid pendant, i.e. a pipe or rod}	10/04	• simulating flames
8/065	• • • {multi-branched, e.g. a chandelier}	10/043	• • {by selectively switching fixed light sources}
8/066	• • • {from a light track (details of supporting elements displaceable along a guiding element <a href="#">F21V 21/34</a> )}	10/046	• • {by movement of parts, e.g. by movement of reflectors or light sources}
8/068	• • • {from a stretched wire}	10/06	• flashing, e.g. with rotating reflector or light source {( <a href="#">signalling lighting devices mounted on vehicles B60Q 1/26</a> )}
8/08	• with a standard {( <a href="#">F21S 6/00</a> takes precedence)}	10/063	• • {for providing a rotating light effect}
8/081	• • {of low-built type, e.g. landscape light}	10/066	• • • {by selectively switching fixed light sources}
8/083	• • • {of bollard type, i.e. with lighting fixture integrated into the standard or mounted on top of it and having substantially the same diameter}	<b>Non-electric lighting</b>	
8/085	• • {of high-built type, e.g. street light}	<b>11/00</b>	<b>Non-electric lighting devices or systems using daylight</b> {(roofs with sky-light opening <a href="#">E04D 13/03</a> ; sun blinds for windows with means for redirecting light onto ceiling of a room <a href="#">E06B 9/00</a> ; hybrid lighting devices combining artificial and natural light <a href="#">F21S 19/00</a> ; solar heat collectors <a href="#">F24S</a> ; solar cells or solar cell modules <a href="#">H01L 31/00</a> )}
8/086	• • • {with lighting device attached sideways of the standard, e.g. for roads and highways}	11/002	• {characterised by the means for collecting or concentrating the sunlight, e.g. parabolic reflectors or Fresnel lenses}
8/088	• • • {with lighting device mounted on top of the standard, e.g. for pedestrian zones}	11/005	• • {with tracking means for following the position of the sun}
<b>9/00</b>	<b>Lighting devices with a built-in power supply; Systems employing lighting devices with a built-in power supply</b>	11/007	• {characterised by the means for transmitting light into the interior of a building}

<b>13/00</b>	<b>Non-electric lighting devices or systems employing a point-like light source; Non-electric lighting devices or systems employing a light source of unspecified shape</b>	41/17	. . . Discharge light sources
		41/172	. . . . High-intensity discharge light sources
		41/173	. . . . Fluorescent light sources
13/02	. Devices intended to be fixed, e.g. ceiling lamp, wall lamp	41/176	. . . Light sources where the light is generated by photoluminescent material spaced from a primary light generating element
13/04	. . with a pendant	41/18	. . . {Combination of light sources of different types or shapes}
13/06	. . . multi-branched, e.g. chandelier	41/19	. . Attachment of light sources or lamp holders (achieving variable light distribution by movable light sources F21S 41/657)
13/08	. . with suspension from a stretched wire	41/192	. . . {Details of lamp holders, terminals or connectors}
13/10	. . with a standard, e.g. street lamp	41/194	. . . {Bayonet attachments}
13/12	. Devices intended to be free-standing, e.g. table lamp, floor lamp	41/196	. . . {Wire spring attachments}
13/14	. Lighting systems	41/198	. . . {Snap-fit attachments}
<b>15/00</b>	<b>Non-electric lighting devices or systems employing light sources not covered by main groups F21S 11/00, F21S 13/00 or F21S 19/00</b>	41/20	. characterised by refractors, transparent cover plates, light guides or filters
<hr/>		41/24	. . Light guides
<b>2017/00</b>	<b>Details solely applicable to the devices covered by groups F21S 13/00 and F21S 15/00</b>	41/25	. . Projection lenses
2017/02	. Fastening and lifting of the lamp-glass	41/255	. . . Lenses with a front view of circular or truncated circular outline
<b>19/00</b>	<b>Lighting devices or systems employing combinations of electric and non-electric light sources; Replacing or exchanging electric light sources with non-electric light sources or vice versa</b>	41/26	. . . Elongated lenses
		41/265	. . . Composite lenses; Lenses with a patch-like shape
19/005	. {Combining sunlight and electric light sources for indoor illumination}	41/27	. . . Thick lenses
		41/275	. . . Lens surfaces, e.g. coatings or surface structures
<b>Vehicle lighting devices specially adapted for vehicle exteriors</b>		41/28	. . {Cover glass}
		41/285	. . {Refractors, transparent cover plates, light guides or filters not provided in groups F21S 41/24-F21S 41/28}
<b>41/00</b>	<b>Illuminating devices specially adapted for vehicle exteriors, e.g. headlamps (reversing lights F21S 43/00)</b>	41/29	. . Attachment thereof (for achieving variable light distribution F21S 41/63)
41/10	. characterised by the light source	41/295	. . . {specially adapted to projection lenses}
41/12	. . characterised by the type of emitted light	41/30	. characterised by reflectors
41/125	. . . Coloured light	41/32	. . Optical layout thereof
41/13	. . . Ultraviolet light; Infrared light	41/321	. . . {the reflector being a surface of revolution or a planar surface, e.g. truncated}
41/135	. . . Polarised	41/322	. . . {the reflector using total internal reflection}
41/14	. . characterised by the type of light source	41/323	. . . {the reflector having two perpendicular cross sections having regular geometrical curves of a distinct nature}
41/141	. . . Light emitting diodes [LED]	41/33	. . . Multi-surface reflectors, e.g. reflectors with facets or reflectors with portions of different curvature
41/143	. . . . the main emission direction of the LED being parallel to the optical axis of the illuminating device	41/331	. . . . {the reflector consisting of complete annular areas}
41/145	. . . . . the main emission direction of the LED being opposite to the main emission direction of the illuminating device	41/332	. . . . . {with continuity at the junction between adjacent areas}
41/147	. . . . the main emission direction of the LED being angled to the optical axis of the illuminating device	41/333	. . . . . {with discontinuity at the junction between adjacent areas}
41/148	. . . . . the main emission direction of the LED being perpendicular to the optical axis	41/334	. . . . . {the reflector consisting of patch like sectors}
41/151	. . . . arranged in one or more lines	41/335	. . . . . {with continuity at the junction between adjacent areas}
41/153	. . . . arranged in a matrix	41/336	. . . . . {with discontinuity at the junction between adjacent areas}
41/155	. . . . Surface emitters, e.g. organic light emitting diodes [OLED]	41/337	. . . . . {the reflector having a structured surface, e.g. with facets or corrugations}
41/16	. . . Laser light sources	41/338	. . . . . {the reflector having surface portions added to its general concavity}
41/162	. . . Incandescent light sources, e.g. filament or halogen lamps	41/36	. . . Combinations of two or more separate reflectors
41/164	. . . . having two or more filaments		
41/166	. . . . characterised by the shape of the filament		
41/168	. . . . having a filament arranged transversally to the optical axis of the illuminating device		

- 41/365 . . . . successively reflecting the light
- 41/37 . . characterised by their material, surface treatment or coatings
- 41/39 . . Attachment thereof ([achieving variable light distribution by movable reflectors F21S 41/675](#))
- 41/395 . . . {[specially adapted to extension reflectors](#)}
- 41/40 . . characterised by screens, non-reflecting members, light-shielding members or fixed shades
- 41/43 . . characterised by the shape thereof
- 41/435 . . . {[Hoods or cap-shaped](#)}
- 41/47 . . Attachment thereof ([achieving variable light distribution by movable screens F21S 41/683](#))
- 41/50 . . characterised by aesthetic components not otherwise provided for, e.g. decorative trim, partition walls or covers
- 41/55 . . Attachment thereof
- 41/60 . . characterised by a variable light distribution
- 41/62 . . for adaptation between right-hand and left-hand traffic
- 41/63 . . by acting on refractors, filters or transparent cover plates
- 41/635 . . . {[by moving refractors, filters or transparent cover plates](#)}
- 41/64 . . . by changing their light transmissivity, e.g. by liquid crystal or electrochromic devices
- 41/645 . . . . {[by electro-optic means, e.g. liquid crystal or electrochromic devices](#)}
- 41/65 . . by acting on light sources
- 41/657 . . . by moving light sources
- 41/663 . . . by switching light sources ([by switching incandescent light sources F21S 41/162](#))
- 41/67 . . by acting on reflectors
- 41/675 . . . by moving reflectors
- 41/68 . . by acting on screens
- 41/683 . . . by moving screens
- 41/686 . . . . Blades, i.e. screens moving in a vertical plane
- 41/689 . . . . Flaps, i.e. screens pivoting around one of their edges
- 41/692 . . . . Shields, i.e. screens not creating an image meant to be projected
- 41/695 . . . . Screens rotating around a vertical axis ([rotating flaps F21S 41/689](#))
- 41/698 . . . . Shaft-shaped screens rotating along its longitudinal axis
- 43/00 Signalling devices specially adapted for vehicle exteriors, e.g. brake lamps, direction indicator lights or reversing lights**
- 43/10 . . characterised by the light source
- 43/13 . . characterised by the type of light source
- 43/14 . . . Light emitting diodes [LED]
- 43/145 . . . . Surface emitters, e.g. organic light emitting diodes [OLED]
- 43/15 . . . Strips of light sources
- 43/16 . . . Light sources where the light is generated by photoluminescent material spaced from a primary light generating element
- 43/19 . . Attachment of light sources or lamp holders
- 43/195 . . . {[Details of lamp holders, terminals or connectors](#)}
- 43/20 . . characterised by refractors, transparent cover plates, light guides or filters
- 43/235 . . Light guides
- 43/236 . . . characterised by the shape of the light guide
- 43/237 . . . . rod-shaped
- 43/239 . . . . plate-shaped
- 43/241 . . . . of complex shape
- 43/242 . . . characterised by the emission area
- 43/243 . . . . emitting light from one or more of its extremities
- 43/245 . . . . emitting light from one or more of its major surfaces
- 43/247 . . . with a single light source being coupled into the light guide
- 43/249 . . . with two or more light sources being coupled into the light guide
- 43/251 . . . the light guides being used to transmit light from remote light sources
- 43/255 . . {[Filters](#)}
- 43/26 . . {[Refractors, transparent cover plates, light guides or filters not provided in groups F21S 43/235 - F21S 43/255](#)}
- 43/27 . . Attachment thereof
- 43/30 . . characterised by reflectors
- 43/31 . . Optical layout thereof
- 43/315 . . . {[using total internal reflection](#)}
- 43/33 . . characterised by their material, surface treatment or coatings
- 43/37 . . Attachment thereof
- 43/40 . . characterised by the combination of reflectors and refractors
- 43/50 . . characterised by aesthetic components not otherwise provided for, e.g. decorative trim, partition walls or covers
- 43/51 . . {[Attachment thereof](#)}
- 45/00 Arrangements within vehicle lighting devices specially adapted for vehicle exteriors, for purposes other than emission or distribution of light**
- 45/10 . . Protection of lighting devices ([cooling of lighting devices F21S 45/40](#); [waterproofing of lighting devices F21S 45/50](#))
- 45/20 . . Promoting gas flow in lighting devices, e.g. directing flow toward the cover glass for demisting ([ventilation F21S 45/30](#); [forced cooling F21S 45/42](#))
- 45/30 . . Ventilation or drainage of lighting devices
- 45/33 . . specially adapted for headlamps
- 45/37 . . specially adapted for signal lamps
- 45/40 . . Cooling of lighting devices
- 45/42 . . Forced cooling
- 45/43 . . . using gas
- 45/435 . . . . circulating the gas within a closed system
- 45/46 . . . using liquid
- 45/465 . . . . from other vehicle cooling systems, e.g. from air-conditioning or engine cooling systems
- 45/47 . . Passive cooling, e.g. using fins, thermal conductive elements or openings
- 45/48 . . . with means for conducting heat from the inside to the outside of the lighting devices, e.g. with fins on the outer surface of the lighting device
- 45/49 . . Attachment of the cooling means
- 45/50 . . Waterproofing
- 45/60 . . Heating of lighting devices, e.g. for demisting
- 45/70 . . Prevention of harmful light leakage