

F21K

NON-ELECTRIC LIGHT SOURCES USING LUMINESCENCE; LIGHT SOURCES USING ELECTROCHEMILUMINESCENCE; LIGHT SOURCES USING CHARGES OF COMBUSTIBLE MATERIAL; LIGHT SOURCES USING SEMICONDUCTOR DEVICES AS LIGHT-GENERATING ELEMENTS; LIGHT SOURCES NOT OTHERWISE PROVIDED FOR

Definition statement

This place covers:

The following light sources per se:

- Luminescence light sources that do not use electricity in the generation of their light (e.g. triboluminescence, thermoluminescence or chemiluminescence)
- Light sources that are created by charges of explosive or combustible materials (e.g. illuminating flash devices)
- Light sources using semiconductor devices as light-generating elements
- Light sources that are not provided for in another subclass.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

| | |
|--------------|--|
| Light source | The entity (e.g. light bulb, gas mantle, combustible charge) that generates light for a lighting device or apparatus. The light source of the lighting devices or lighting apparatus may be electrically powered (e.g. power is supplied by electric batteries, electric cells, electric generators, flexible cables for electric mains constructions), non-electrically powered (e.g. power is created by combustible fuels, triboluminescence) or a naturally occurring source of light (e.g. sunlight). |
|--------------|--|

F21K 2/00

Non-electric light sources using luminescence (using excitation by radioactivity [G21H 3/02](#), [H01J 65/06](#), [H01J 65/08](#); using excitation by an external electromagnetic field or by external corpuscular radiation [H01J 65/04](#)); Light sources using electrochemiluminescence

Definition statement

This place covers:

Light sources that emit light by effects other than thermal radiation and that do not use electric power for the generation of light, for example chemoluminescent, triboluminescent or thermoluminescent light sources.

Chemoluminescent light sources activated by an electric field.

Relationships with other classification places

This group covers light sources per se. The application or incorporation of light sources in lighting devices or systems is covered by subclasses for lighting devices or systems. The structural combination of light sources or lighting devices with other articles is covered by the places for those articles or, if no such place exists, in [F21V 33/00](#).

Relationships with other classification places

In this group, it is desirable to add the indexing codes of subclasses [F21W](#) and [F21Y](#).

References

Limiting references

This place does not cover:

| | |
|---|----------------------------|
| Using a radioactive source to excite a material into luminescence | G21H 3/02 |
| Lamps in which a gas filling is excited to luminesce by an external electromagnetic field or by external corpuscular radiation | H01J 65/04 |
| Lamps in which a gas filling is excited to luminesce by radioactive material structurally associated with the lamp | H01J 65/06 |
| Lamps, other than those in which all the electrodes are within the vessel, in which a screen or coating is excited to luminesce by radioactive material located inside the vessel | H01J 65/08 |

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

| | |
|--|----------------------|
| Lighting devices or systems thereof, being portable or specially adapted for transportation | F21L |
| Non-portable lighting devices; Systems thereof | F21S |
| Functional features or details of lighting devices or systems thereof; Structural combinations of lighting devices with other articles, not otherwise provided for | F21V |

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|---|
| Light sources using semiconductor devices as light generating elements, e.g. using light emitting diodes [LED] or lasers | F21K 9/00 |
| Luminescent materials | C09K 11/00 |
| Using photoluminescent materials for modifying spectral characteristics of the light emitted by lighting devices | F21V 1/17 , F21V 3/08 , F21V 3/12 , F21V 5/10 , F21V 7/26 , F21V 7/30 , F21V 9/30 - F21V 9/38 , F21V 9/45 , F21V 13/08 , F21V 13/14 |
| Frequency changing of light | G02F 2/02 |
| Electric discharge tubes or discharge lamps | H01J |
| Transforming the wavelength of the light of gas- or vapour-discharge lamps by luminescence | H01J 61/42 |
| Semiconductor devices specially adapted for light emission | H01L 33/00 |
| Semiconductor lasers | H01S 5/00 |
| Electroluminescent light sources | H05B 33/00 |
| Organic semiconductor devices specially adapted for light emission | H10K 50/00 |

F21K 2/005**{excited by infrared radiation using up-conversion}****References****References out of a residual place***Examples of places in relation to which this place is residual:*

| | |
|-----------------------------|---------------------------|
| Frequency changing of light | G02F 2/02 |
|-----------------------------|---------------------------|

F21K 5/00**Light sources using charges of combustible material, e.g. illuminating flash devices****Definition statement***This place covers:*

Light sources, for example illuminating flash devices, in which light is generated by charges of explosive or combustible materials.

Relationships with other classification places

This group covers light sources per se. The application or incorporation of light sources in lighting devices or systems is covered by subclasses for lighting devices or systems. The structural combination of light sources or lighting devices with other articles is covered by the places for those articles or, if no such place exists, in [F21V 33/00](#).

In this group, it is desirable to add the indexing codes of subclasses [F21W](#) and [F21Y](#).

References**Application-oriented references**

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

| | |
|--|----------------------------|
| Lighting devices or systems thereof, being portable or specially adapted for transportation | F21L |
| Non-portable lighting devices; Systems thereof | F21S |
| Functional features or details of lighting devices or systems thereof; Structural combinations of lighting devices with other articles, not otherwise provided for | F21V |
| Fireworks | F42B 4/00 |
| Flares; Torches | F42B 4/26 |
| Projectiles or missiles of illuminating type, e.g. carrying flares | F42B 12/42 |
| Photographic flash units | G03B 15/03 |

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|-----------------------------------|---------------------------|
| Explosive or thermic compositions | C06B |
| Candles | C11C 5/00 |

| | |
|----------------------|----------------------------|
| Burners | F23D |
| Circuit arrangements | H05B 46/00 |

F21K 5/023

{Ignition devices in photo flash bulbs}

References

References out of a residual place

Examples of places in relation to which this place is residual:

| | |
|---|----------------------------|
| Ignition devices being part of a shutter mechanism included in a camera | G03B 9/70 |
| Ignition devices not being part of a shutter mechanism and included in a camera | G03B 15/04 |
| Ignition circuits for combustion lamps | H05B 46/00 |

F21K 5/026

{using mechanical firing, e.g. percussion of a fulminating charge}

References

References out of a residual place

Examples of places in relation to which this place is residual:

| | |
|---|------------------------------|
| Ignition devices using mechanical firing included in a camera | G03B 15/0489 |
|---|------------------------------|

F21K 9/00

Light sources using semiconductor devices as light-generating elements, e.g. using light-emitting diodes [LED] or lasers

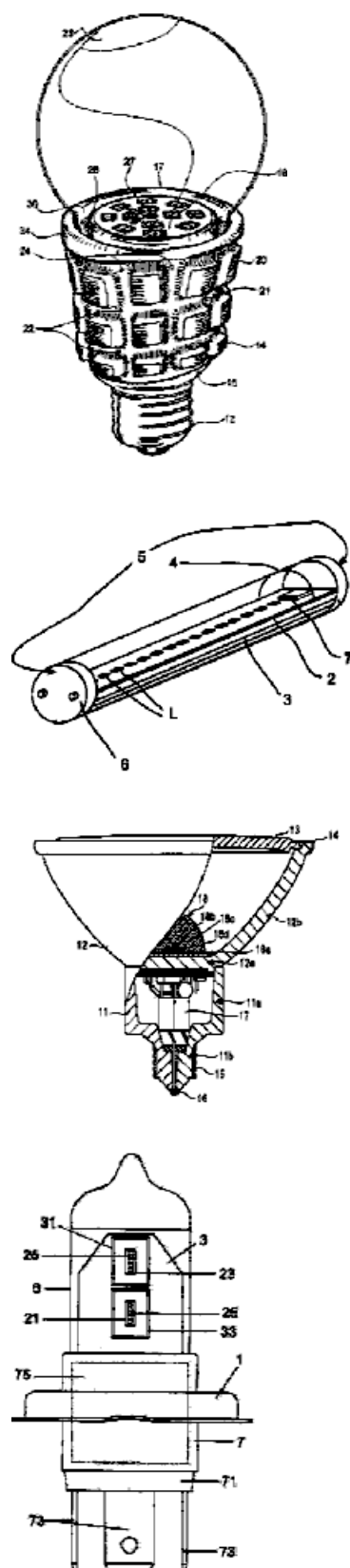
Definition statement

This place covers:

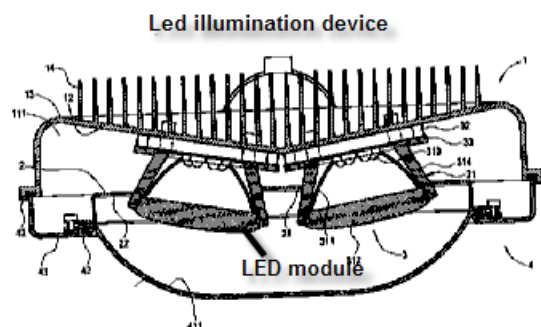
- Light sources using semiconductor devices as light-generating elements, e.g. using light-emitting diodes [LED] or lasers
- LED lamp, consisting of a retrofit lamp, for replacement of a halogen, tungsten filament, discharged lamp or other similar lamp in an existing lighting device, the LED lamp having a connector for use with a standard socket of a existing lighting device, the LED lamp using one or more semiconductor as light generating element
- LED module, consisting of a self-contained assembly of light emitting diodes that can be installed as a unit, for insertion in a housing in order to form a lighting device, e.g. for street lighting
- "Light source" means a light-generating component intended for installation in a fitting or holder incorporated in a lighting device

Illustrative examples of subject matter classified in this place:

Examples for LED modules



LED modules



Relationships with other classification places

This group covers light sources using semiconductor devices as light-generating elements per se. Lighting devices or systems in which those light sources are installed are covered by subclass [F21L](#) or [F21S](#).

When classifying in this group, subject matter also relating to the subclass [F21V](#) is further classified in that subclass whenever appropriate. [F21V](#) is a function oriented place whereas this group is an application place.

Attention is drawn to subclass [H05B](#) that covers electrical aspects of the same technical subjects that are covered by class [F21](#).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|---|------------------------------|
| Systems of lighting devices of a modular construction, not provided for in main groups F21S 4/00 - F21S 10/00 or F21S 19/00 | F21S 2/005 |
| Lighting devices using a string rigidly mounted on a frame or included in a resin | F21S 4/20 |
| Details of lighting devices | F21V |
| Packages with a plurality of LED dies | H01L 25/0753 |
| Light emitting diodes, LED packages | H01L 33/00 |
| Laser diodes per se | H01S 5/00 |
| Electric lamps using a combination of different types of light generation | H05B 35/00 |
| Details of circuits arrangements for LED's | H05B 45/00 |
| Control related to points in colour temperature diagram | H05B 45/20 |
| Details of printed circuit boards | H05K |
| OLEDs per se | H10K 50/00 |

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

| | |
|------|------------------------------|
| LED | Light Emitting Diode |
| OLED | Organic Light Emitting Diode |

F21K 9/237

Details of housings or cases, i.e. the parts between the light-generating element and the bases; Arrangement of components within housings or cases (F21K 9/238 takes precedence)

Definition statement

This place covers:

Details of housings or cases, i.e. the parts between the light-generating element and the bases, of retrofit light sources for lighting devices with a single fitting for each light source, e.g. for substitution of incandescent lamps with bayonet or threaded fittings

Arrangement of components within housings or cases of retrofit light sources for lighting devices with a single fitting for each light source, e.g. for substitution of incandescent lamps with bayonet or threaded fittings

Illustrative examples of subject matter classified in this group, see figures below:

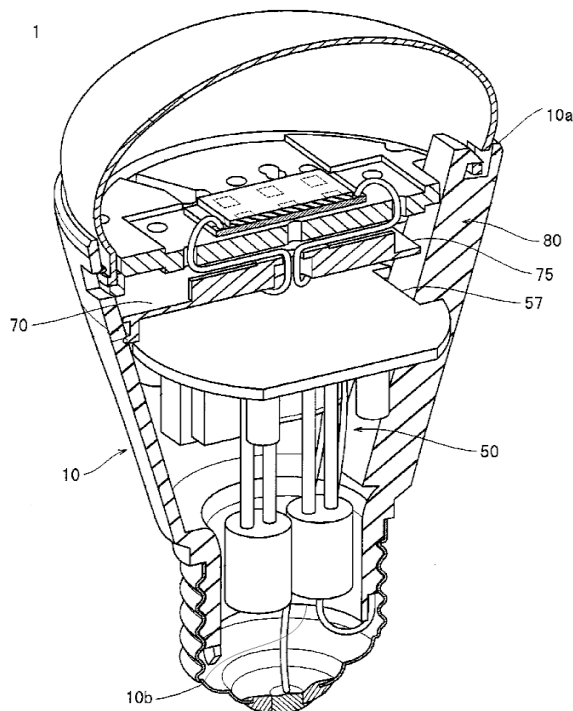


Figure 1. A cylindrical housing 10 has a first component unit 50 and a second component unit 70 therein. The housing 10 has therein a guide member 80 that is elongated in a direction from one-end 10a side of the housing 10 to the other-end 10b side thereof. The first and second component units respectively comprise notch sections 57, 75 that are different in shape and size from each other, and the first and second component units, when inserted in the housing 10 from the one-end 10a side,

Definition statement

are movable along the guide member 80 in a state wherein the guide member 80 is positioned in the notch sections.

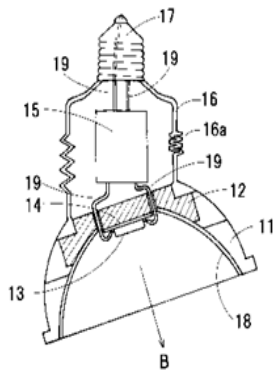


Figure 2. A cylindrical housing 16 is interposed between the heat dissipater 12 and the cap 17 and is flexible so that the heat dissipater 12 is tiltable relative to the cap 17.

Relationships with other classification places

When classifying in this group, subject matter also relating to the group [F21V 15/01](#) is further classified in that group whenever appropriate. [F21V 15/01](#) is a function oriented place whereas this group is an application place.

References

Limiting references

This place does not cover:

| | |
|--|----------------------------|
| Arrangement or mounting of circuit elements integrated in the light source | F21K 9/238 |
|--|----------------------------|

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|------------------------------|----------------------------|
| Housings of lighting devices | F21V 15/01 |
|------------------------------|----------------------------|

F21K 9/238

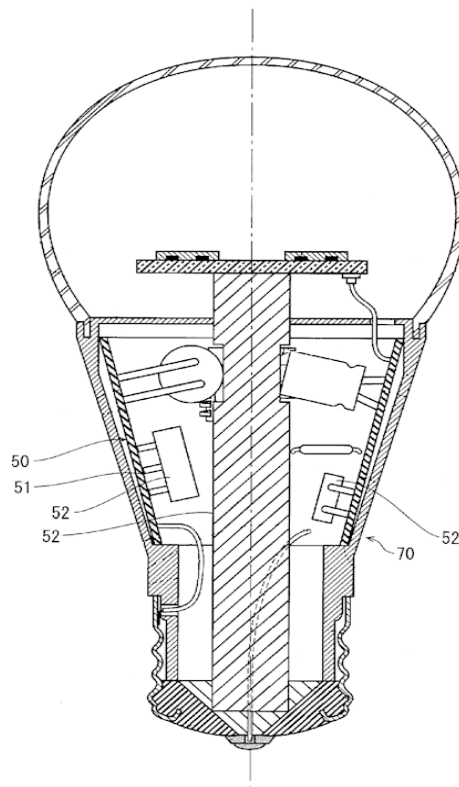
Arrangement or mounting of circuit elements integrated in the light source

Definition statement

This place covers:

Arrangement or mounting of circuit elements integrated in the retrofit light source for lighting devices with a single fitting for each light source, e.g. for substitution of incandescent lamps with bayonet or threaded fittings.

Illustrative example of subject matter classified in this group, see figure below:



A circuit unit 50 has a circuit board 51 to which a plurality of electronic components 52 are mounted. The circuit unit 50 is housed in a case 70 in a manner such that the circuit board 51 is along the inner peripheral surface of the case 70.

Relationships with other classification places

When classifying in this group, subject matter also relating to the main group [F21V 23/00](#) is further classified in that main group whenever appropriate. [F21V 23/00](#) is a function oriented place whereas this group is an application place.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|----------------------------|
| Arrangement of electric circuit elements in or on lighting devices | F21V 23/00 |
|--|----------------------------|

F21K 9/272

**Details of end parts, i.e. the parts that connect the light source to a fitting;
Arrangement of components within end parts ([F21K 9/278](#) takes precedence)**

Definition statement

This place covers:

- Details of end parts, i.e. the parts that connect the light source to a fitting, of retrofit light sources for lighting devices with two fittings for each light source, e.g. for substitution of fluorescent tubes
- Arrangement of components of end parts of retrofit light sources for lighting devices with two fittings for each light source, e.g. for substitution of fluorescent tubes

Definition statement

Illustrative examples of subject matter classified in this group, see figures below:

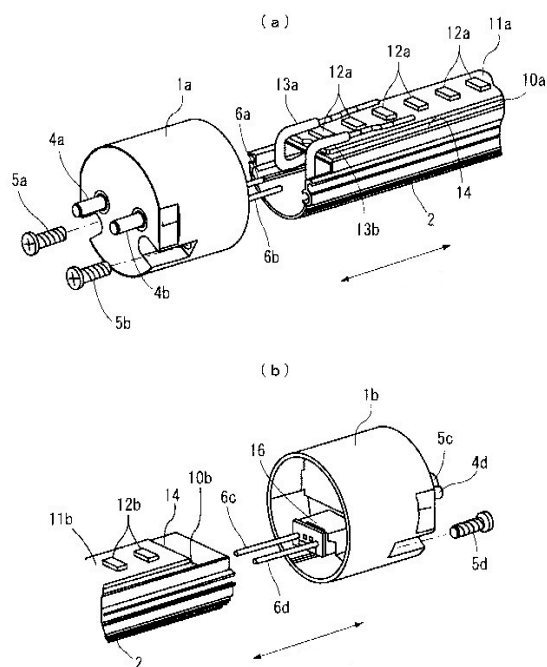


Figure 1. cap, and Figure 2. cap.

References

Limiting references

This place does not cover:

| | |
|--|----------------------------|
| Arrangement or mounting of circuit elements integrated in the light source | F21K 9/278 |
|--|----------------------------|

F21K 9/278

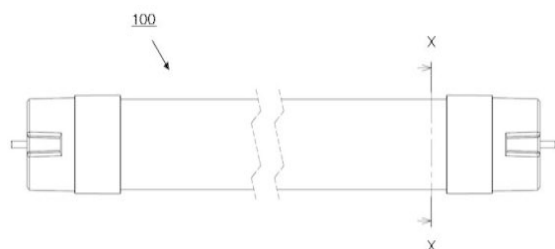
Arrangement or mounting of circuit elements integrated in the light source

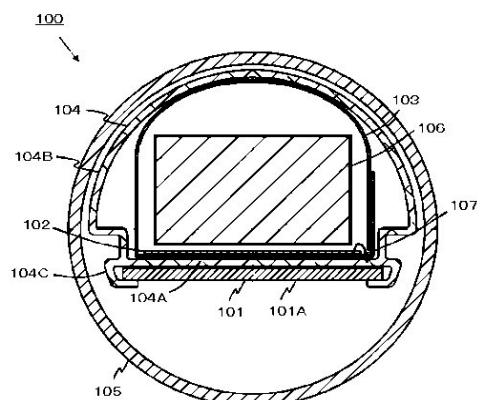
Definition statement

This place covers:

Arrangement or mounting of circuit elements integrated in the retrofit light source for lighting devices with two fittings for each light source, e.g. for substitution of fluorescent tubes

Illustrative examples of subject matter classified in this group, see figures below:





A power supply board 102 having a power supply circuit 106 for supplying lighting-up power to the LED, an insulating inner 103 for surrounding the power supply board, and a metallic heat sink 104 for improving heat radiation performance of the power supply board. The power supply circuit 106 is electrically connected to the heat sink 104 through a common wire 107.

Relationships with other classification places

When classifying in this group, subject matter also relating to the main group [F21V 23/00](#) is further classified in that main group when ever appropriate. [F21V 23/00](#) is a function oriented place whereas this group is an application place.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|----------------------------|
| Arrangement of electric circuit elements in or on lighting devices | F21V 23/00 |
|--|----------------------------|

F21K 9/61

using light guides

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|---|---------------------------|
| Use of light guides, e.g. fibre optic devices, in lighting devices or systems | G02B 6/00 |
|---|---------------------------|

F21K 9/64

using wavelength conversion means distinct or spaced from the light-generating element, e.g. a remote phosphor layer

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|---------------------------|
| Elements for modifying spectral properties, polarisation or intensity of the light emitted, e.g. filters | F21V 9/00 |
|--|---------------------------|

| | |
|--|----------------------------|
| LED package where wavelength conversion elements forming part of or are in direct contact with the LED | H01L 33/50 |
|--|----------------------------|

F21K 9/66

Details of globes or covers forming part of the light source

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|---|---------------------------|
| Globes, bowls or cover glasses of lighting devices or systems | F21V 3/00 |
|---|---------------------------|

F21K 9/68

Details of reflectors forming part of the light source

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|------------------------------|---------------------------|
| Reflectors for light sources | F21V 7/00 |
|------------------------------|---------------------------|

F21K 9/69

Details of refractors forming part of the light source

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|------------------------------|---------------------------|
| Refractors for light sources | F21V 5/00 |
|------------------------------|---------------------------|

F21K 99/00

Subject matter not provided for in other groups of this subclass

Definition statement

This place covers:

Light sources that are not provided for elsewhere in the CPC.

Relationships with other classification places

This group covers light sources per se. The application or incorporation of light sources in lighting devices or systems is covered by subclasses for lighting devices or systems. The structural combination of light sources or lighting devices with other articles is covered by the places for those articles or, if no such place exists, in [F21V 33/00](#).

In this group, it is desirable to add the indexing codes of subclasses [F21W](#) and [F21Y](#).

References

References out of a residual place

Examples of places in relation to which this place is residual:

| | |
|--|---|
| Non-electric light sources using luminescence | F21K 2/00 |
| Light sources using electrochemiluminescence | F21K 2/08 |
| Light sources using charges of combustible material, e.g. illuminating flash devices | F21K 5/00 |
| Light sources using semiconductor devices as light generating elements, e.g. using light emitting diodes [LED] or lasers | F21K 9/00 |
| Luminescent materials | C09K 11/00 |
| Candles | C11C 5/00 |
| Incandescent mantles; Other incandescent bodies heated by combustion | F21H |
| Lighting devices or systems thereof, being portable or specially adapted for transportation | F21L |
| Non-portable lighting devices; Systems thereof | F21S |
| Functional features or details of lighting devices or systems thereof; Structural combinations of lighting devices with other articles, not otherwise provided for | F21V |
| Burners | F23D |
| Fireworks | F42B 4/00 |
| Electric discharge tubes or discharge lamps | H01J |
| Electric incandescent lamps | H01K |
| Semiconductor devices specially adapted for light emission | H01L 33/00 |
| Masers, lasers | H01S |
| Electric arc lamps | H05B 31/00 |
| Electroluminescent light sources | H05B 33/00 |
| Electric light sources using a combination of different types of light generation | H05B 35/00 |
| Circuit arrangements | H05B 47/00 , H05B 46/00 |
| Organic semiconductor devices specially adapted for light emission | H10K 50/00 |

Special rules of classification

If the disclosure gives no indication as to whether it relates to electrical means or not, it should be classified as if it were in fact electric.