

EUROPEAN PATENT OFFICE
U.S. PATENT AND TRADEMARK OFFICE

CPC NOTICE OF CHANGES 1606

DATE: JANUARY 1, 2024

PROJECT DP11826

The following classification changes will be effected by this Notice of Changes:

<u>Action</u>	<u>Subclass</u>	<u>Group(s)</u>
DEFINITIONS:		
Definitions New:	H01S	5/0225, 5/02253, 5/02255, 5/02257, 5/0231, 5/02315, 5/0232, 5/02375, 5/0239, 5/183, 5/185, 5/42, 5/423
Definitions Modified:	H01S	5/14

No other subclasses/groups are impacted by this Notice of Changes.

This Notice of Changes includes the following [Check the ones included]:

1. CLASSIFICATION SCHEME CHANGES

- A. New, Modified or Deleted Group(s)
- B. New, Modified or Deleted Warning(s)
- C. New, Modified or Deleted Note(s)
- D. New, Modified or Deleted Guidance Heading(s)

2. DEFINITIONS

- A. New or Modified Definitions (Full definition template)
- B. Modified or Deleted Definitions (Definitions Quick Fix)

3. REVISION CONCORDANCE LIST (RCL)

4. CHANGES TO THE CPC-TO-IPC CONCORDANCE LIST (CICL)

5. CHANGES TO THE CROSS-REFERENCE LIST (CRL)

2. A. DEFINITIONS (new)

H01S5/0225

Definition statement

This place covers:

Specific optical components in the laser beamline with the optical components being located inside the laser diode housing or forming part of the housing, e.g. the laser diode emission leaves the housing along a specific optical component.

References

Informative references

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

Mountings or housings characterised by the shape of the housings	H01S 5/02208
Optical components external to the laser cavity, specially adapted therefor, e.g. for homogenisation or merging of the beams or for manipulating laser pulses, e.g. pulse shaping	H01S 5/005

H01S5/02253

Definition statement

This place covers:

Out-coupling of light using lenses that are in the laser beamline and are located inside the laser diode housing or form part of the housing.

Relationships with other classification places

The way of classifying optical components inside a laser diode housing is explained with the help of the following example as depicted in the figure below:

The lens 350 is an optical component in the laser beamline and forming part of the housing 130 and is classified in group H01S 5/02253.

The beam steering mirrors 316,317 following the laser diodes 310 are classified in group H01S 5/02255.

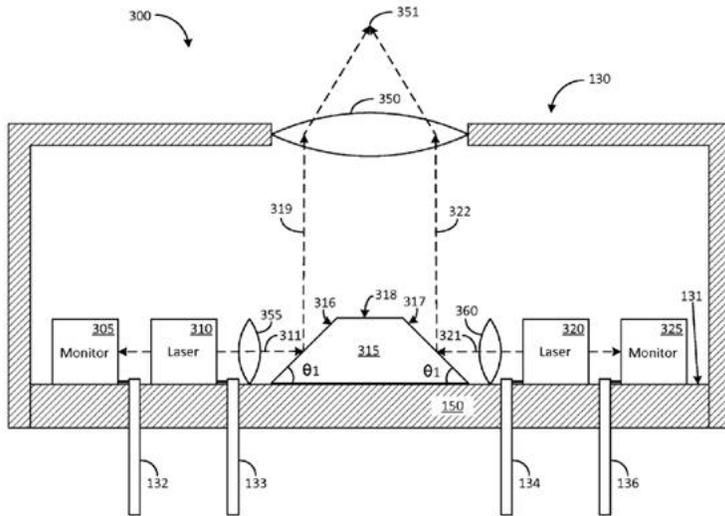


FIG. 3

H01S5/02255

Definition statement

This place covers:

Out-coupling of light using beam deflecting elements that are in the laser beamline and are located inside the housing or form part of the housing.

H01S5/02257

Definition statement

This place covers:

Out-coupling of light using windows that are in the laser beamline and form part of the housing.

Relationships with other classification places

The relationship with other classification places is explained with the help of the following example as depicted in the figure below:

The phosphor forming part of the window is classified in group H01S 5/0087.

The window 110 comprises a phosphor 111 and is part of the laser diode housing 100 and is classified in group H01S 5/02257.

The beam steering mirrors 40 following the laser diodes 20 are classified in group H01S 5/02255.

The specific lenses 90 in the beamline inside the housing are classified in group H01S 5/02253.

FIG. 1

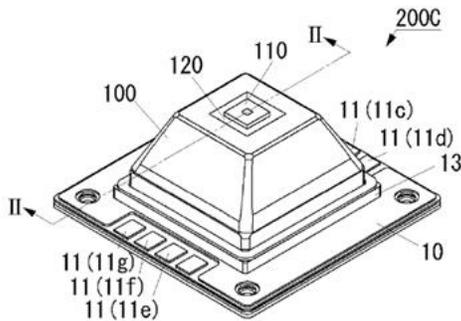
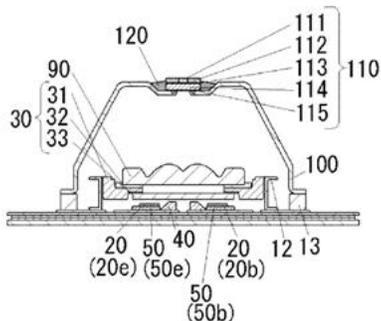


FIG. 2



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Informative references

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

Can-type, e.g. TO-CAN housings with emission along or parallel to symmetry axis	H01S 5/02212
Heat spreaders, i.e. improving heat flow between laser chip and heat dissipating elements	H01S 5/02476

H01S5/02315

Definition statement

This place covers:

Support members which carry only a laser diode and which are made from a specific material or having specific dimensions or shape.

Support members made from a material so that it takes the function of a heat spreader should also be classified for that aspect in group H01S 5/02476.

This symbol is not allocated for a support member which carries besides the laser diode further specific optical or electrical elements. Such arrangements are classified in groups H01S 5/02325, H01S 5/02326 and H01S 5/0239 if applicable.

References

Informative references

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

Heat spreaders, i.e. improving heat flow between laser chip and heat dissipating elements	H01S 5/02476
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H01S5/0232

Definition statement

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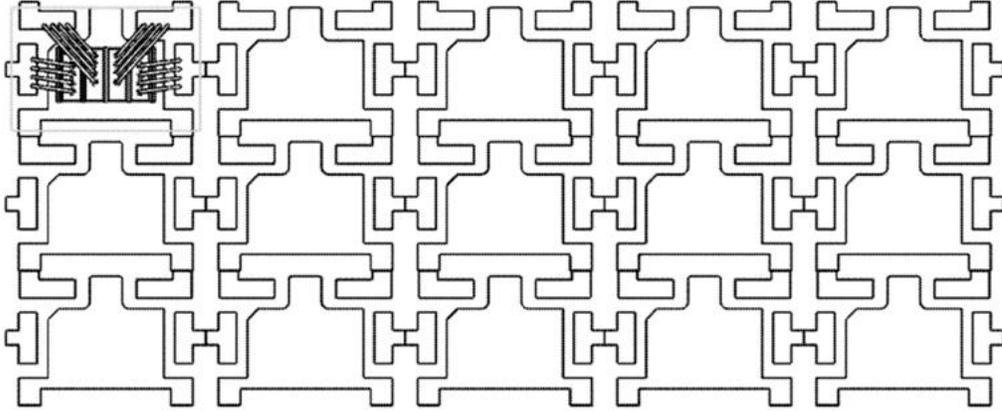


FIG. 5B

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H01S5/02375

Definition statement

This place covers:

Positioning of a laser diode on a mount with the help of for example marks on the mounting surface or marks on the semiconductor chip. A mark can also be implemented by correspondingly shaped contact surfaces on the mounting surface of a mount, e.g. self-alignment.

Relationships with other classification places

Specific positioning of the laser diode relative to optical components being also mounted on the same mount with the help of for example grooves or stops formed in the surface of the mount is classified in group H01S 5/02326.

References

Informative references

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

Support members, e.g. bases or carriers	H01S 5/02315
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H01S5/0239

Definition statement

This place covers:

Combinations of electrical elements and/or combinations of optical elements on the same mount or in the same housing as the laser diode. Such combinations should only be classified in this place if the mount or the housing are specially adapted for the combinations or if a particular layout is provided.

H01S5/183

Definition statement

This place covers:

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Surface emitting lasers having only a vertical cavity.

In case of so called "half VCSEL" which are used as a gain medium in for example external cavity laser diodes or in case the VCSEL is coupled to resonator elements integrated into a photonic circuit still the details of the VCSEL chip itself are classified in group H01S 5/183 independent of the geometrical arrangement of the external cavity.

H01S5/185

Definition statement

This place covers:

Surface emitting lasers having only a horizontal cavity. The surface emission may be realized by a beam deflecting mirror external to the semiconductor laser chip but manufactured into the semiconductor layer structure by for example etching. I.e., the beam deflecting element is an integral part of the semiconductor laser structure.

Relationships with other classification places

Surface emission resulting from an edge-emitting semiconductor laser and a separate beam deflecting element both being arranged on a mount is classified in group H01S 5/02255.

In case the output coupling is performed with the help of a photonic bandgap structure in addition classification in group H01S 5/11 should be considered.

References

Limiting references

This place does not cover:

Construction or shape of the optical resonator comprising a photonic bandgap structure	H01S 5/11
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Informative references

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

Support members, e.g. bases or carriers	H01S 5/02315
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H01S5/42

Definition statement

This place covers:

Arrays of surface emitting lasers as classified in groups H01S 5/18, H01S 5/185 and H01S 5/187.

Special rules of classification

In order to be able to distinguish between arrays of horizontal or folded cavity surface emitting lasers classification in group H01S 5/42 should always be accompanied by the additional classification in appropriate groups H01S 5/18, H01S 5/185 or H01S 5/187.

H01S5/423

Definition statement

This place covers:

Arrays of vertical cavity surface emitting lasers as classified in group H01S 5/183.

References

Informative references

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

Measuring arrangements for measuring contours or curvatures	G01B 11/24
Systems according to group G01S17/00 using multiple transmitters	G01S 7/4815
3D imaging with simultaneous measurement of time-of-flight at a 2D array of receiver pixels, e.g. time-of-flight cameras or flash lidar	G01S 17/894

2. A. DEFINITIONS (modified)

H01S 5/14

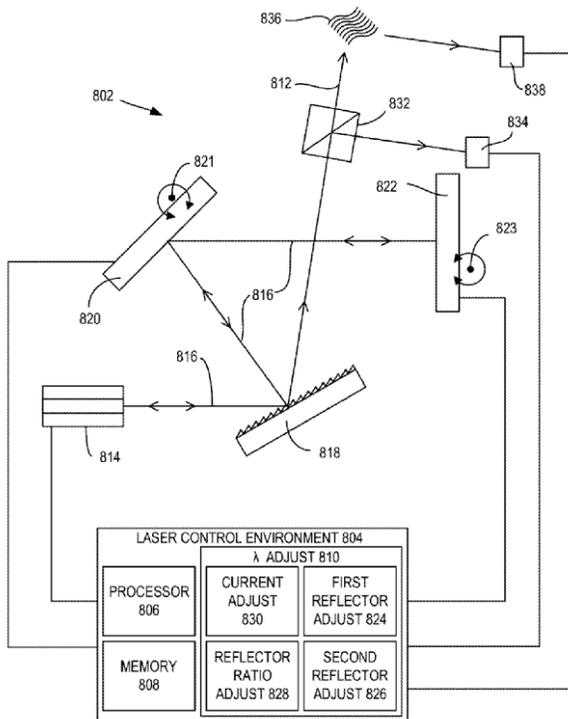
Special rules of classification

Replace: The existing Special rules section with the updated text and NEW image below.

For external cavity lasers covered by H01S 5/14 the group H01S 5/06 is additionally allocated for the control/stabilisation by applying voltages to the electrodes of the semiconductor laser chip or temperature tuning of the laser diode itself.

In this group external cavity elements correspond to elements inside the laser cavity or forming part of the cavity but outside of the semiconductor laser chip. Specific optical elements forming part of the external cavity and their control should also be classified in H01S 3/08, H01S 3/10 and H01S 3/13.

As an example, Fig. 8 is discussed.



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H01S 5/143: The ECLD is in a Littman-Metcalf configuration, this is the basic configuration of the laser.

Details of the external cavity elements are classified in H01S 3/00:

H01S 3/105: The tilt of one mirror is used for wavelength control;

H01S 3/139: The tilt of one mirror is controlled with a feed-back loop for stabilisation of the set wavelength; and H01S 3/0816: The resonator has 4 reflectors counting also the reflecting back facet of the laser diode chip.