★★★ ＜第 21 回知的財産翻訳検定試験【第 10 回英文和訳】＞ ★★★
≪１級課題 -電気・電子工学-≫

【解答にあたっての注意】
１．問題の指示により和訳してください。
２．解答語数に特に制限はありません。適切な個所で改行してください。
３．課題文に段落番号がある場合、これを訳文に記載してください。
４．課題は３題あります。それぞれの課題の指示に従い、３題すべて解答してください。

問１）　次の英文は、特許明細書の「従来技術」に関する記載です。日本語に訳して下さい。

Typically, when a software developer is writing code, the developer will compile and execute the code in a debugging mode. A debugging mode may allow the developer a view into how the code is functioning during execution. When code is executed in a debugging mode, the developer can typically: view variable values during execution, set breakpoints at which execution of the code will halt until the developer triggers continued execution, and/or step through execution of the code on a line-by-line basis. Such an arrangement may work well when the code is being compiled, debugged, and/or executed at a computer system local to the developer. In conventional arrangements, a choice between execution of code either entirely in a debugging mode (that permits debugging functionality) or a runtime mode (that conventionally does not permit debugging functionality) may need to be made. Such a choice may be easily made by the developer when he is the only person using the computer system. Further, when a developer has code that is desired to be debugged, the developer may only be interested in debugging a portion of the code, while allowing the remainder of the code to execute without debugging functionality.

問２）　次の英文は、特許明細書の「発明の実施の形態」に関する記載です。添付した図

面（ＦＩＧ．１、ＦＩＧ．２）も参照して、日本語に訳して下さい。

Board 100 includes a printed circuit board substrate 102 made of a material that is flexible in the longitudinal direction so that it may be bent from the relaxed state shown in FIG. 1 into a radius to match the radius of a reel strip in a mechanical reel-type game. An example of a bent condition of board substrate 102 is shown in FIG. 2. Referring again to FIG. 1, twenty-four transverse rows of LEDs 104 (which may be single color or multi-color LEDs) are mounted on the substrate 102. The LED rows are staggered to allow closer spacing between rows and because the closer spacing allows for more even lighting by using half the LEDs. Board 100 includes eight attachment openings 106 which each represent an attachment or mounting point at which the board may be mounted to a bracket. Each of the four lowermost openings 106 shown in FIG. 1 are located in a different respective corner of a rectangular light-supporting region of substrate 102. LEDs 104 are mounted in the rectangular light-supporting region of substrate 102. In one implementation, each LED 104 is individually controllable. Other forms of the invention may control each row of LEDs 104 as a unit.

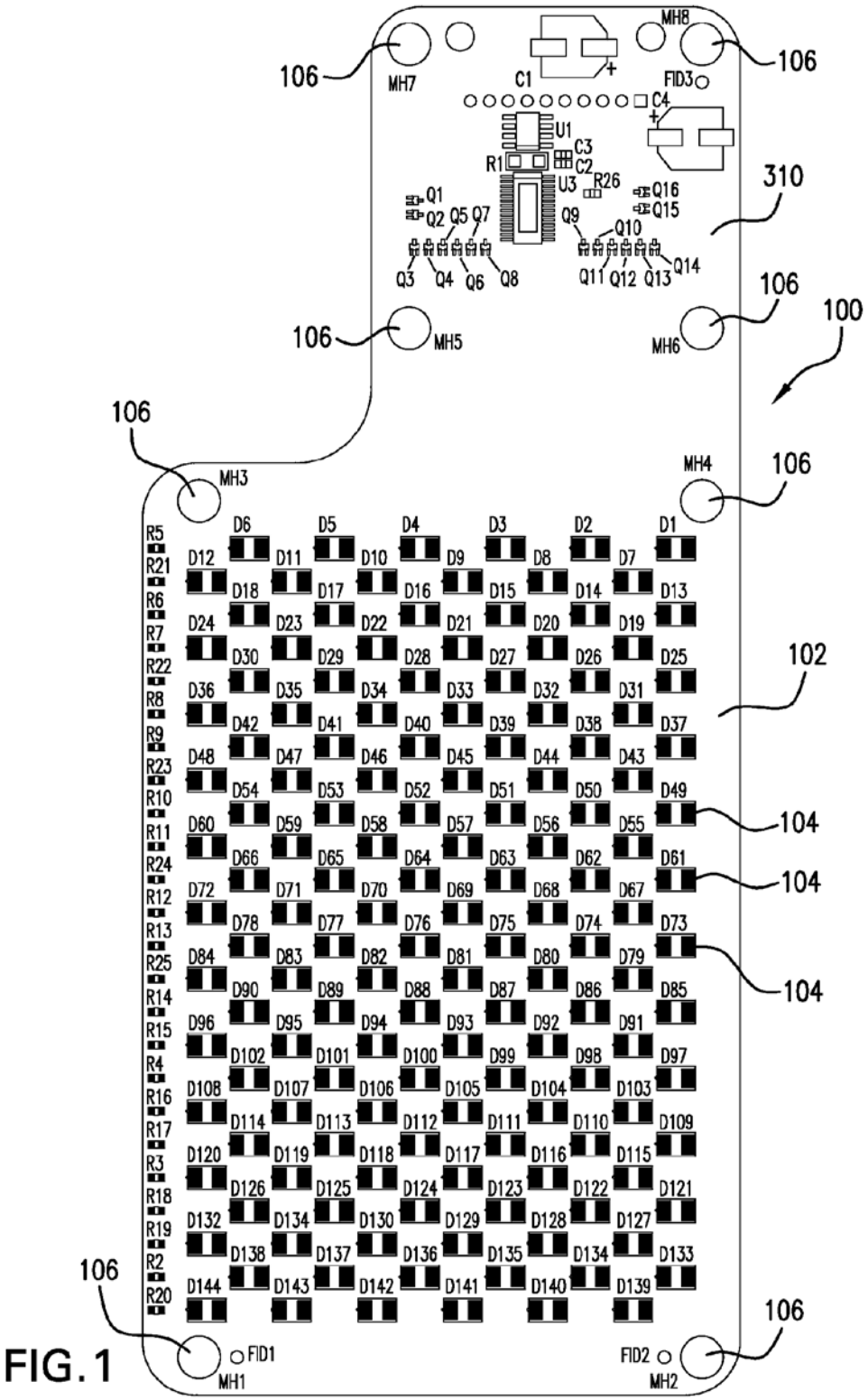
MH8
106
106
MH7
C1
FID3
C4
U1
C3
R1
C2
U3
R26
Q16
Q15
Q1
Q2
Q5
Q7
Q9
Q10
310
Q3
Q4
Q6
Q8
Q11
Q12
Q13
Q14
106
106
MH5
MH6
100
106
MH3
MH4
106
D6
D5
D4
D3
D2
D1
R5
R21
R6
R7
R22
R8
R9
R23
R10
R11
R24
R12
R13
R25
R14
R15
R4
R16
R17
R3
R18
R19
R2
R20
D12
D11
D10
D9
D8
D7
D18
D17
D16
D15
D14
D13
D24
D23
D22
D21
D20
D19
D30
D29
D28
D27
D26
D25
102
D36
D35
D34
D33
D32
D31
D42
D41
D40
D39
D38
D37
D48
D47
D46
D45
D44
D43
D54
D53
D52
D51
D50
D49
104
D60
D59
D58
D57
D56
D55
D66
D65
D64
D63
D62
D61
104
D72
D71
D70
D69
D68
D67
D78
D77
D76
D75
D74
D73
104
D84
D83
D82
D81
D80
D79
D90
D89
D88
D87
D86
D85
D96
D95
D94
D93
D92
D91
D102
D101
D100
D99
D98
D97
D108
D107
D106
D105
D104
D103
D114
D113
D112
D111
D110
D109
D120
D119
D118
D117
D116
D115
D126
D125
D124
D123
D122
D121
D132
D134
D130
D129
D128
D127
D138
D137
D136
D135
D134
D133
D144
D143
D142
D141
D140
D139
106
106
FID1
MH1
FID2
MH2

FIG. 1

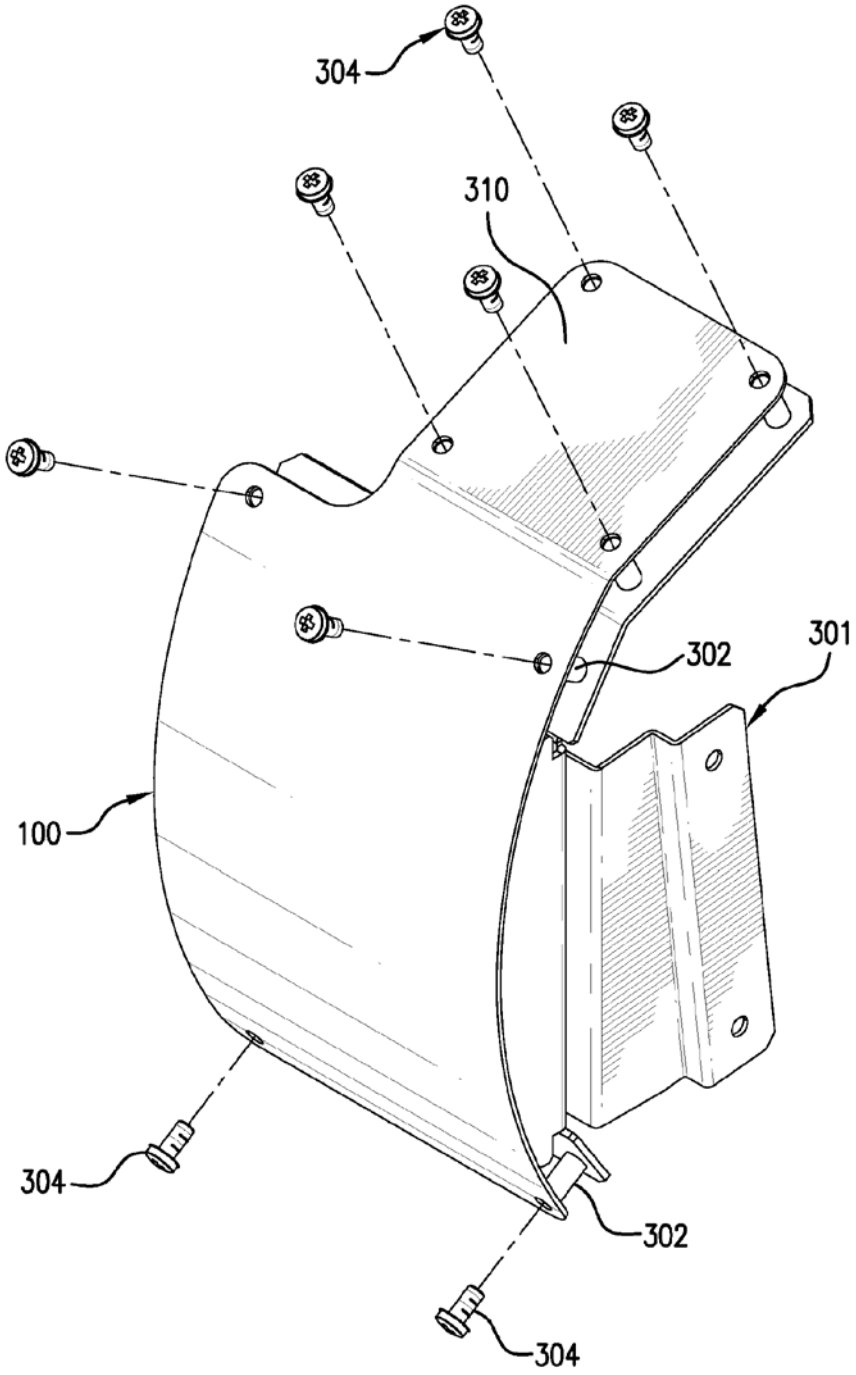

FIG. 2

問３）次の英文は、特許明細書のクレーム（請求項）です。日本語に訳して下さい。なお、翻訳に当っては、クレームの後に記載している実施の形態の記載（抜粋）及び図面を参照して下さい。

1. A laser comprising:

a pumping light source which emits an optical pumping beam; and

a laser resonator including an input mirror optically coupled to the pumping light source for receiving and passing therethrough the optical pumping beam, an output mirror, a lasant material, and a nonlinear optical material,

the lasant material being a material which lases in response to the optical pumping beam so as to generate a fundamental wave including multiple linearly polarized modes of a first wavelength and an additional mode of a second wavelength relatively close to but different from the first wavelength,

the nonlinear optical material and the lasant material being positioned between the input mirror and the output mirror such that (i) the lasant material receives as its input the optical pumping beam after the pumping beam is caused to pass through the input mirror, (ii) the nonlinear optical material receives the fundamental wave generated by the lasant material as an input, and (iii) the output mirror receives an output from the nonlinear optical material,

the nonlinear optical material being configured to produce as its output an output wave including (i) two orthogonal linearly polarized modes of the first wavelength, (ii) multiple second harmonic linearly polarized modes of one half of the first wavelength, and

(iii) an additional mode of the second wavelength, and

the laser resonator further including a filter arrangement for allowing the additional mode and the second harmonic modes to pass therethrough.

（以下参考：実施の形態（抜粋））

The operation of the laser in accordance with the present invention will be described in detail with reference to FIG. 2. As mentioned above, pumping beam 24 is directed into laser resonator 14 thereby causing lasant material 18 to produce fundamental wave 26. With the configuration described above, fundamental wave 26 is actually made up of multiple spectral modes of light at wavelengths at and/or about the first given wavelength. In the situation where Nd:YVO4 is used as the lasant material, this first given wavelength is 1064 nm and the multiple spectral modes of light are modes having about this first given wavelength of 1064 nm. Each of these various modes propagates along the optical axis of the lasant material and each of the modes is linearly polarized as it emits outside the laser cavity. As mentioned in the background, these multiple modes, which have slightly different wavelengths, tend to strongly couple to one another causing amplitude fluctuations in the fundamental wave.

In addition to the multiple modes clustered immediately around the first given wavelength, the inventor has discovered that when using a neodymium doped lasant material as described above, fundamental wave 26 also includes an additional mode or modes at and/or about a second given wavelength relatively close to but different than the first given wavelength. This additional mode or modes are produced as an intrinsic transition of the lasant material. In the case of Nd:YVO4, the first given wavelength (the desired main oscillation wavelength of the fundamental wave) is 1064 nm as mentioned above. For Nd:YVO4, the inventor has discovered that the additional mode(s) at the second given wavelength have a wavelength at and/or about 1084 nm. In the case of Nd:YAG, the first given wavelength is also 1064 nm and the additional mode at the second given wavelength is about 1061 nm. For Nd:YLF, the first given wavelength (the desired main oscillation wavelength) is 1047 nm and the additional mode at the second given wavelength is at 1053 nm. As described in the background, because the additional mode(s) at the second given wavelength have a wavelength relatively close to but different than the modes at the first given wavelength, the additional mode(s) also may strongly couple with the modes at the first given wavelength causing additional instability in the fundamental wave.

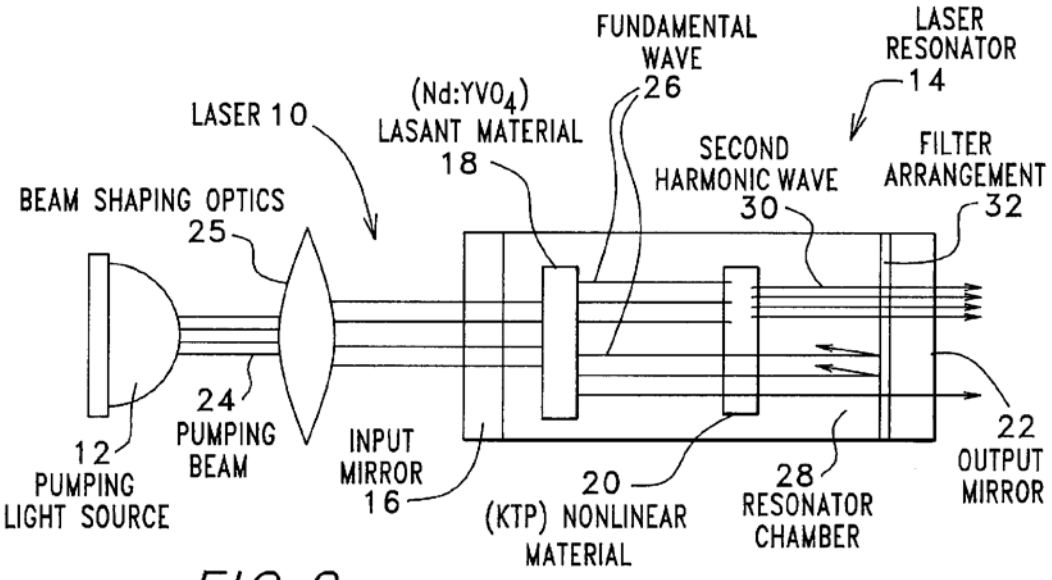
FUNDAMENTAL WAVE
26
LASER RESONATOR
14
LASER 10
(Nd:YVO4) LASANT MATERIAL
18
SECOND HARMONIC WAVE
30
FILTER ARRANGEMENT
32
BEAM SHAPING OPTICS
25
24
PUMPING BEAM
12
PUMPING LIGHT SOURCE
INPUT MIRROR
16
20
(KTP) NONLINEAR MATERIAL
28
RESONATOR CHAMBER
22
OUTPUT MIRROR

FIG. 2