

1	LIQUID CRYSTAL SYSTEM	30	...With particular dielectric mirror for spatial light modulator (i.e., SLM)
2	.Liquid crystal for recording or imaging on photosensitive medium	31	.Electron beam excitation
3	..Printer or print bar	32	.Plasma excitation
4	..Exposure device for lithography	33	.Electrical excitation of liquid crystal (i.e., particular voltage pulses, AC vs. DC, threshold voltages, etc.)
5	.Projector including liquid crystal cell (s)		
6	..Overhead projector	34	..With application of holding or bias voltage (i.e., voltage which does not change the optical state of the liquid crystal)
7	..Video/motion picture projector		
8	..Plural light path projectors		
9	...Having light separated into S and P polarization	35	..For driving Grandjean to focal conic or dynamic scattering type liquid crystal
10	...Wherein liquid crystal cells include microencapsulated or polymer dispersed liquid crystal	36	..Including diverse driving frequencies
11	.Heads-up display	37	..Polarity based driving
12	.Liquid crystal writing tablet	38	..With supplemental capacitor
13	.Liquid crystal eyewear (glasses, goggles, etc.)	39	...In active matrix with separate dedicated capacitor line
14	..For protection	40	..With antistatic elements
15	..Stereoscopic	41	..With particular switching device
16	.Liquid crystal window	42	...Transistor
17	.Computational system employing liquid crystal element (neural network, correlation device, optical computer)	43	....Structure of transistor
18	.Variable or rotatable retarder used with other retarders to produce filtering effects (Solc, Lyot, Partial)	44	....With light block conductively connected to transistor
19	PARTICULAR EXCITATION OF LIQUID CRYSTAL	45	.....Transferred transistor
20	.Thermal excitation	46	....With particular gate electrode structure
21	..By heating electrode	47	.....With gate electrode between liquid crystal and semiconductor layer
22	..By light beam heating (e.g., IR, laser, etc.)	48	....Plural nonredundant transistors per pixel
23	.Magnetic or pressure excitation	49	...Two terminal nonlinear switching device (e.g., N-I-N, S-I-S, Ferroelectric, etc.)
24	.Optical excitation	50	....Diode
25	..With photoconductive layer (e.g., spatial light modulator (SLMs))	51	...Metal-insulator-metal (i.e., MIM)
26	...Of an alloy of S, Se, or Te	52	....With particular insulating layer
27	...With silicon photoconductive layer	53	...Varistor
28	....With silicon photodiode, N-I-N photoconductor structure, or P-I-P photoconductor structure	54	..Matrix including additional element (s) which correct or compensate for electrical fault
29	..With particular light blocking layer for separating read and write lights	55	...Laser links
		56	PARTICULAR STRUCTURE

57	.Lens or prism separate from projection system (i.e., it is not integral part of illumination system)	80	...With color formed by different color polarizer or color filter associated with each cell
58	.Holder, support, frame, or housing	81	...With cells being substantially identical and driven simultaneously, providing improved contrast
59	..Including electromagnetic shielding	82	...With projection of electrodes in one cell substantially nonoverlapping that of another cell (i.e., for improving resolution)
60	..Including resilient support member	83	...With each cell displaying a different pattern
61	.Particular illumination	84	.Having significant detail of cell structure only
62	..With integral optical element for guiding or distributing light from the light source	85	..Producing a greyscale effect
63	...Specifically for guiding light in a front-lit device	86	..Microencapsulated or polymer dispersed liquid crystal
64	...Diffuser between light source and liquid crystal	87	...For variable polarizer
65	...Edge lit type light guide behind liquid crystal	88	...Polymer network liquid crystal
66	...Louvres	89	...With particular encapsulating medium
67	...Reflector having particular shape behind light source	90	...With second material between liquid crystal and encapsulating medium
68	..With plural diverse light sources (e.g., for day and night)	91	...With nonpolymer encapsulating medium
69	..Electroluminescent light source	92	...Formed by particular technique
70	..Fluorescent light source	93	...Having UV polymerized element
71	...Formed of planar phosphor or fluorescent layer separate from illumination source	94	...Formed with particular alignment technique
72	.Detector of liquid crystal temperature	95	..Microlenses
73	.Interconnection of plural cells in parallel (e.g., edge to edge)	96	..Polarizer
74	.Interconnection of plural cells in series	97	...Color
75	..For compensation of birefringence effects	98	...Circular
76	...Of twisted (or chiral) nematic or supertwisted nematic liquid crystal	99	...With particular non-zero angle between polarization axis and orientation direction
77	..With particular cooperation between cells (e.g., alternating selection or simultaneous selection of cells)	100	...For ferroelectric liquid crystal
78	...Cell cooperation providing multicolor display	101	...For supertwisted nematic liquid crystal
79	...With color formed by different dye in each cell	102	...With particular non-zero angle between polarization axis and compensator optical axis
		103	...With particular non-zero and non-90 angle between opposite polarization axes
		104	..Filter
		105	...Interference filter
		106	...Color filter

107	....With different liquid crystal thickness for each color of filter	129	....With plural alignments on the same substrate
108	....With plural colors for each display element (i.e., each pixel or segment)	130	....For perpendicular alignment
109	....With unequal areas for different colors or with fractional shift between one line of colors and the next	131	.....Silanes
110	...Opaque mask or black mask	132	....For parallel alignment
111	....Conductive mask	133	....With chiral smectic liquid crystal (includes ferroelectric liquid crystal)
112	..Diffuser (on viewer side of liquid crystal)	134	.....With particular pretilt angle from the alignment layer
113	..Reflector	135	.....With particular polymer composition of the alignment layer (e.g., fluorine-containing aliphatic polyamide)
114	...Dielectric mirror (i.e., in devices excited other than by photoconductive layer) or transflector	136	....With particular pretilt angle (i.e., with liquid crystal other than chiral smectic)
115	...Cholesteric reflector	137	...Antireflection layer
116	..Photoconductive element (i.e., not used for exciting)	138	...Insulating layer
117	..Compensator or retarder (i.e., not using liquid crystal cell)	139	..Electrode or bus detail (i.e., excluding supplemental capacitor and transistor electrodes)
118	...With refractive indices in the x, y, and z directions	140	...Formed of semiconductor material
119	...Multiple compensators	141	...Interdigitated (comb-shaped) electrodes
120	....Including at least one with negative intrinsic birefringence	142	...Segmented or fixed pattern
121	...With particular non-zero angle between compensator optical axis and orientation direction	143	...Matrix electrodes
122	..Particular nonoptical film or layer (e.g., adhesive layer, barrier layer)	144	....Split pixels
123	...Alignment layer	145	....Nonrectilinear rows and columns
124	....Formed by particular technique (e.g., Langmuir Blodgett, stretching, etc.)	146	....Nonrectangular (odd) shaped pixels
125	.....Having particular deposited structure (e.g., angled, plural layered) produced by vapor deposition	147	....Multilayer electrodes
126	.....Having structure produced by rubbing under particular rubbing conditions (e.g., particular direction, rubbing force, by using named rubbing material or roller, etc.)	148	....Resistance reducing electrodes
127	....Formed of a liquid crystal material	149	...Having connection detail to external circuit
128	....With different alignments on opposite substrates	150	....Featuring flexible circuit (i.e., tape automated bonding (TAB), etc.)
		151	....With driving circuit having input and output electrodes on liquid crystal substrate
		152	....With detail of terminals to external circuit
		153	..Liquid crystal seal
		154	...With particular injection port or injection plug
		155	..Spacer

- 156 ...Formed as walls (e.g., between pixels) or integral with substrate
- 157 ...Plural types in single liquid crystal cell
- 158 ..Substrate
- 159 ...Fiberoptic faceplate
- 160 ...With particular topology (i.e., other than for diffraction and spacers)
- 161 ..Heating or cooling element other than for exciting
- 162 ..Dual function layer or element
- 163 ..Nonchiral additive in the liquid crystal material
- 164 ...Fluorescent additive
- 165 ...Pleochroic dye
- 166 ...Nonspacer particles significantly smaller than liquid crystal thickness (e.g., scattering centers, ferromagnetic particles, etc.)
- 167 **WITH SPECIFIED NONCHEMICAL CHARACTERISTIC OF LIQUID CRYSTAL MATERIAL**
- 168 .Utilizing change between diverse phases (e.g., cholesteric to nematic)
- 169 .Utilizing change within liquid crystal phase (e.g., Grandjean to focal conic, etc.)
- 170 .Utilizing reversal in sign of dielectric anisotropy
- 171 .Within smectic phase
- 172 ..Within chiral smectic phase (includes ferroelectric)
- 173 ...Greyscale resulting from liquid crystal property other than solely Smectic A
- 174 ...Antiferroelectric
- 175 .Within cholesteric phase
- 176 ..Using reflection characteristic
- 177 .Within nematic phase
- 178 ..Negative dielectric anisotropy only
- 179 ..Twisted (or chiral) nematic or supertwisted nematic
- 180 ...Having particular parameter of twist
- 181 ...Having particular birefringence or retardation
- 182 **CELL CONTAINING LIQUID CRYSTAL OF SPECIFIC COMPOSITION**
- 183 .Polymer liquid crystal
- 184 .In smectic phase
- 185 .In cholesteric phase
- 186 .In nematic phase
- 187 **NOMINAL MANUFACTURING METHODS OR POST MANUFACTURING PROCESSING OF LIQUID CRYSTAL CELL**
- 188 .Changing liquid crystal phase
- 189 .Injecting liquid crystal
- 190 .Sealing of liquid crystal
- 191 .Aligning liquid crystal with means other than alignment layer
- 192 .Defect correction or compensation
- 193 **LIQUID CRYSTAL OPTICAL ELEMENT**
- 194 .Passive liquid crystal polarizer
- 195 .Antidazzle mirror formed from liquid crystal cell
- 196 .Beam dividing switch formed from liquid crystal cell
- 197 ..Including passive liquid crystal switch portion
- 198 .Liquid crystal etalon
- 199 .Liquid crystal sensors (e.g., voltmeters, pressure sensors, temperature sensors)
- 200 .Liquid crystal lenses other than for eyewear
- 201 .Liquid crystal diffraction element
- 202 ..For beam steering
- FOREIGN ART COLLECTIONS**
- FOR 000 **CLASS-RELATED FOREIGN DOCUMENTS**
- Any foreign patents or non-patent literature from subclasses that have been reclassified have been transferred directly to FOR Collections listed below. These Collections contain ONLY foreign patents or non-patent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.
- UTILIZING A LIQUID CRYSTAL MATERIAL (359/36)**
- FOR 100 .With particular illumination (359/48)

- FOR 101 ..Having optical element (e.g., curved reflector behind light source, etc.) (359/49)
- FOR 102 ..Fluorescent light (e.g., FLAD type) (359/50)
- FOR 103 .Microencapsulated liquid crystal (359/51)
- FOR 104 ..With particular encapsulating medium (359/52)
- FOR 105 .Plural contiguous cells (359/53)
- FOR 106 .Having electrodes arranged into rows and columns (359/54)
- FOR 107 ..With liquid crystal electrode excitation (359/55)
- FOR 108 ...For ferroelectric liquid crystal (359/56)
- FOR 109 ...With particular switching device (359/57)
- FOR 110 ..With particular switching device (359/58)
- FOR 111...Transistor (359/59)
- FOR 112 ...Diode (359/60)
- FOR 113 .Having particular nonelectrical detail of cell structure enclosing or adjacent liquid crystal material (359/62)
- FOR 114 ..Polarizer (359/63)
- FOR 115 ...Color (359/64)
- FOR 116 ...Circular (359/65)
- FOR 117 ..Diffuser (359/69)
- FOR 118 ...Dielectric mirror or transflector (359/71)
- FOR 119 ..Particular nonoptical film or layer (e.g., adhesive layer, barrier layer, etc.) (359/74)
- FOR 120 ...Alignment layer (359/75)
- FOR 121Formed by particular technique (e.g., vapor deposition, rubbing, etc.) (359/76)
- FOR 122For perpendicular alignment (359/77)
- FOR 123For parallel alignment (359/78)
- FOR 124 ..Substrate (359/82)
- FOR 125 ..Holder, support, or frame (359/83)
- FOR 126 .With specified electrode excitation characteristic of liquid crystal material (359/84)
- FOR 127 ..Provided by particular circuit (359/85)
- FOR 128 .With detector of liquid crystal temperature (359/86)
- FOR 129 .Electrode detail (359/87)
- FOR 130 ..Reversal in sign of dielectric anisotropy (359/92)
- FOR 131 .Birefringers effect (359/93)
- FOR 132 .Variable index of refraction (359/94)
- FOR 133 .Variable diffraction (359/95)
- FOR 134 .Variable absorption of light due to an additive in the liquid crystal material (359/96)
- FOR 135 ..Fluorescent additive (359/97)
- FOR 136 ..Pleochroic dye (359/98)
- FOR 137 .With specified nonchemical characteristic of liquid crystal material (359/99)
- FOR 138 ..Within smectic phase (359/100)
- FOR 139 ..Within cholesteric phase (359/101)
- FOR 140 ..Within nematic phase (359/102)
- FOR 141 .Cell containing liquid crystal of specified composition (359/103)
- FOR 142 ..In smectic phase (359/104)
- FOR 143 ..In cholesteric phase (359/105)
- FOR 144 ..In nematic phase (359/106)

