

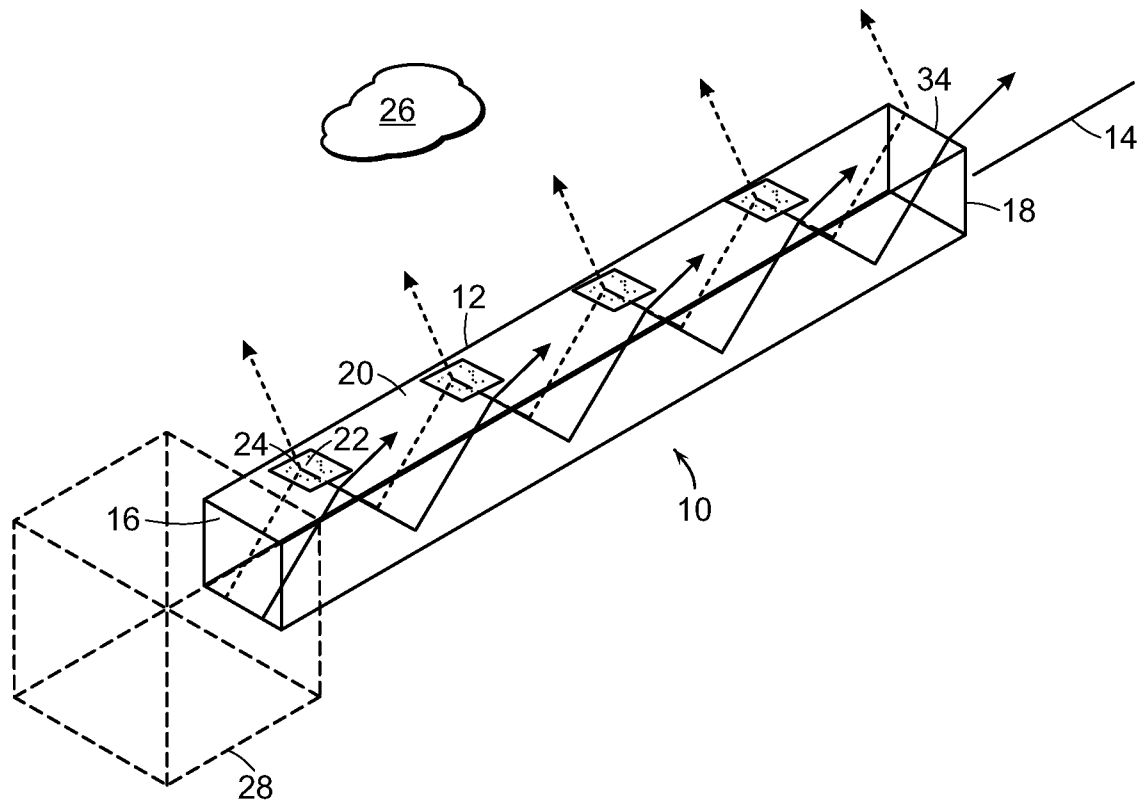


FIG. 1

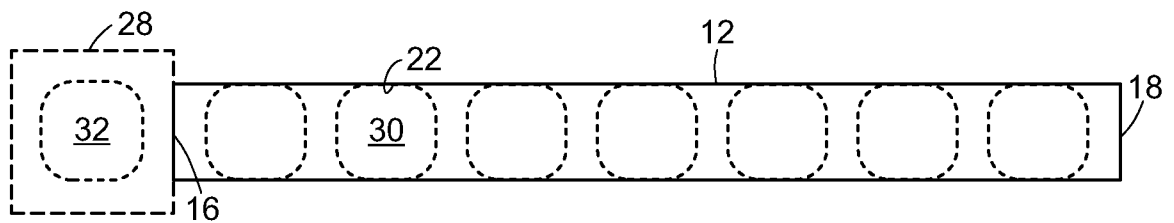


FIG. 2

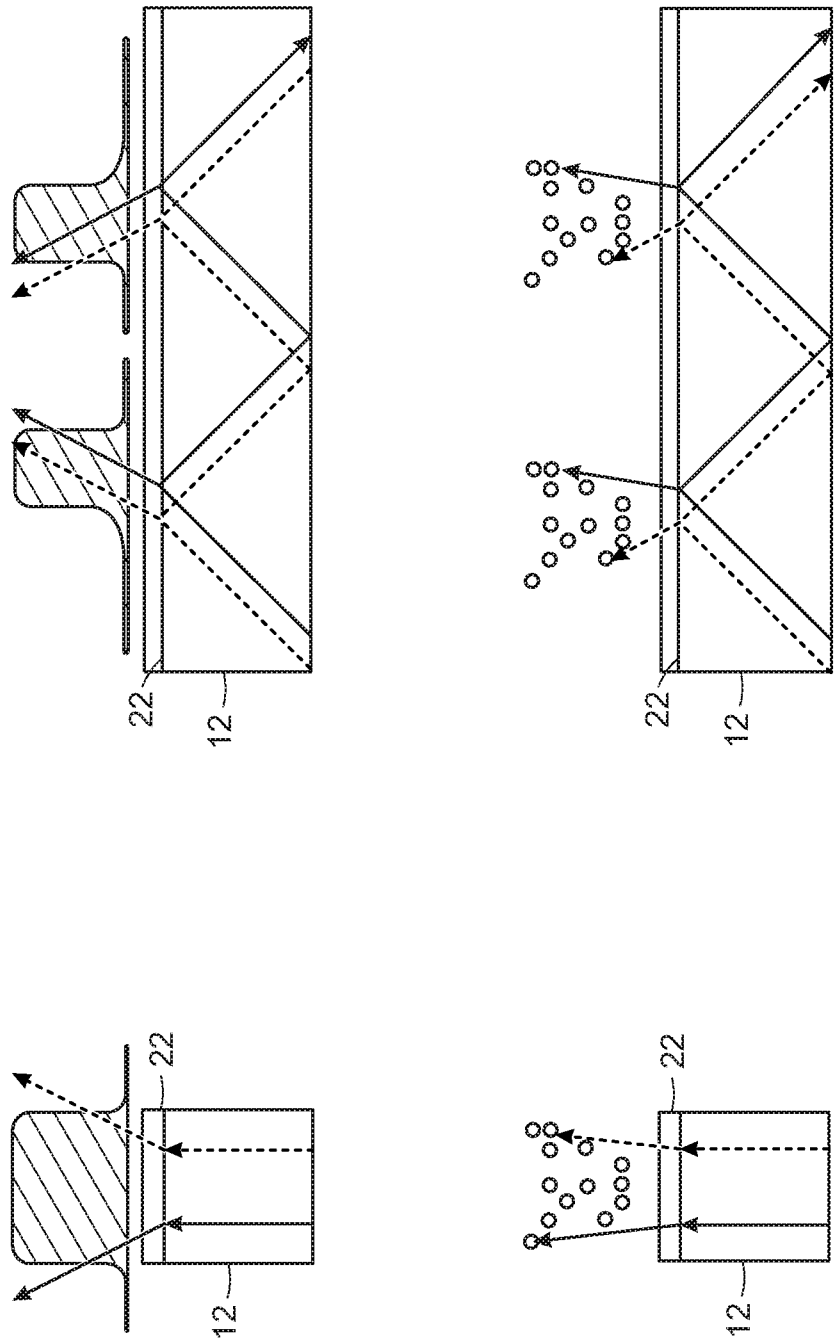


FIG. 3

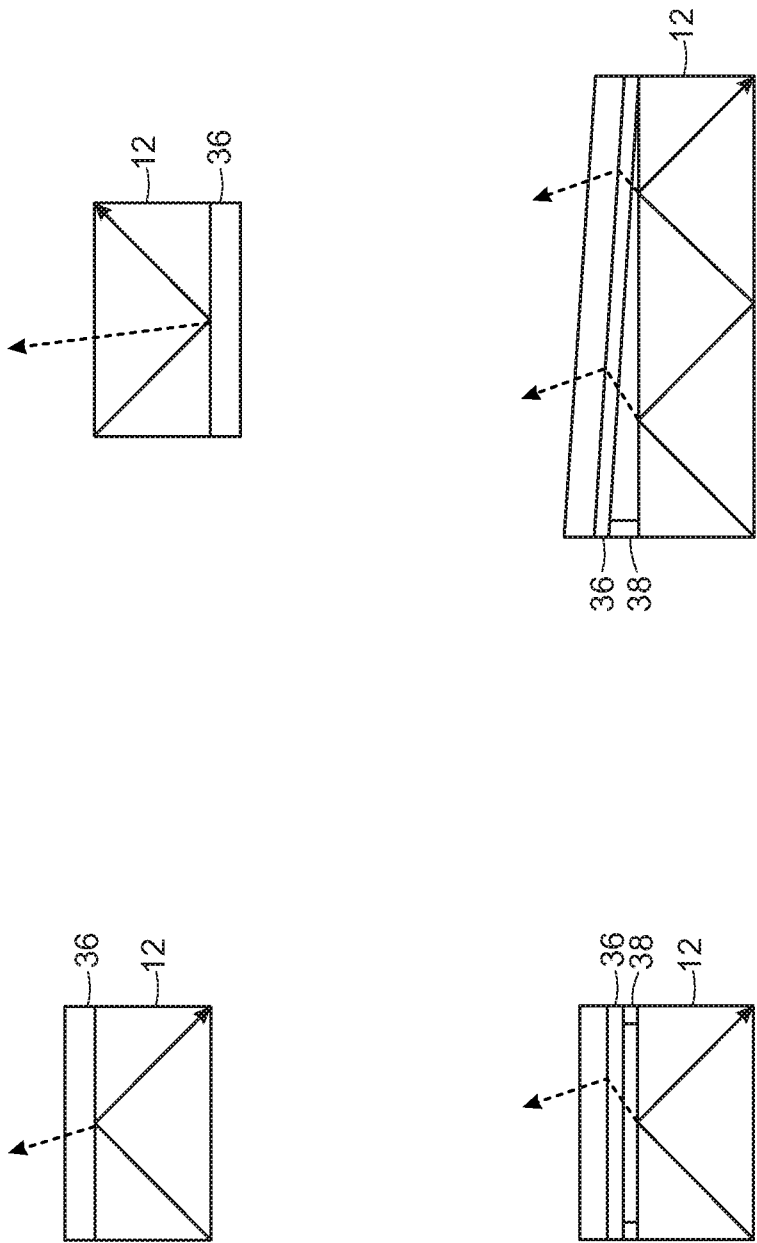


FIG. 4

<i>Design</i>	<i>Number VCSELs</i>	<i>Dimensions VCSEL^a</i>	<i>Dimensions Light Bar</i>	<i>Number Bar Illuminations</i>	<i>Total Dimensions</i>	<i>Illumination Ripple^b</i>
<i>Single VCSEL</i>	1	100x100μm	No light bar	0	1x1mm	100%
<i>VCSEL array*</i>	200	1x1mm	No light bar	0	1x1mm	7%
<i>Single VCSEL with small bar</i>	1	100x100μm	1x2x0.04mm	20	1x2x1mm	22%
<i>VCSEL array* with small bar</i>	200	1x1mm	1x2x0.4mm	2	1x3x1mm	5%
<i>VCSEL array* with medium bar</i>	200	1x1mm	1x3x0.4mm	3	1x4x1mm	4%
<i>Narrow VCSEL array** with small bar</i>	100	1x0.25mm	1x2x0.1mm	8	1x2.25x1mm	3%
<i>Narrow VCSEL array** with med bar</i>	100	1x0.25mm	1x3x0.1mm	12	1x3.25x1mm	2.8%
<i>Narrow VCSEL array** with long bar</i>	100	1x0.25	1x25x0.1mm	100	1x25x1mm	1%

a The dimension is that of the VCSEL itself; the die may be bigger

b The actual illumination variation will be less than (estimated 50% of) this estimate, due to the spectral bandwidth of the VCSELs, and possibility of illumination on the return path

** The VCSEL array is similar to the current ams/Heptagon/Princeton Optronics VCSEL array*

*** Custom aspect ratio VCSEL array*

FIG. 5

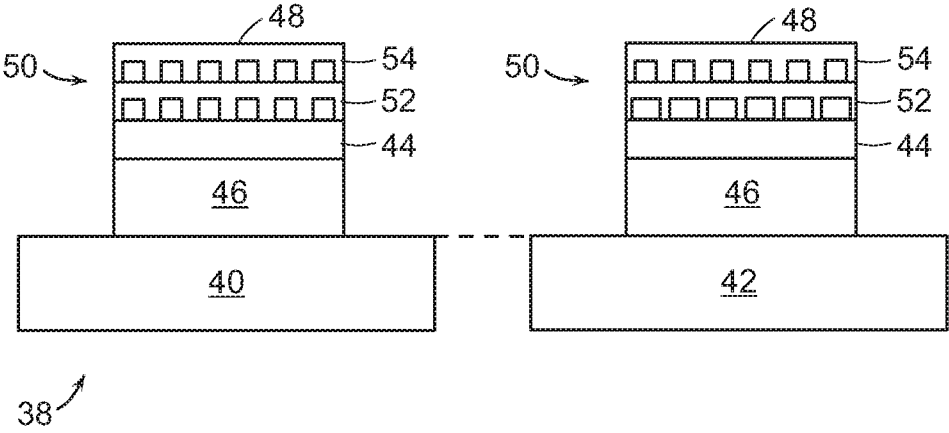


FIG. 6

L	m	n	$\delta\phi_2, \delta\phi_{DBR}$	$\delta\phi_1$	λ
$0.28\mu m$	2	3	0	0	$0.85\mu m$
$0.28\mu m$	2	3	0	$\pi/8$	$1.05\mu m$
$0.28\mu m$	2	3	0	$\pi/4$	$1.36\mu m$
$0.57\mu m$	4	3	0	0	$0.85\mu m$
$0.57\mu m$	4	3	0	$\pi/8$	$0.94\mu m$
$0.57\mu m$	4	3	0	$\pi/4$	$1.04\mu m$
$1.7\mu m$	12	3	0	0	$0.85\mu m$
$1.7\mu m$	12	3	0	$\pi/4$	$0.91\mu m$
$1.7\mu m$	12	3	0	$\pi/2$	$0.97\mu m$

FIG. 7

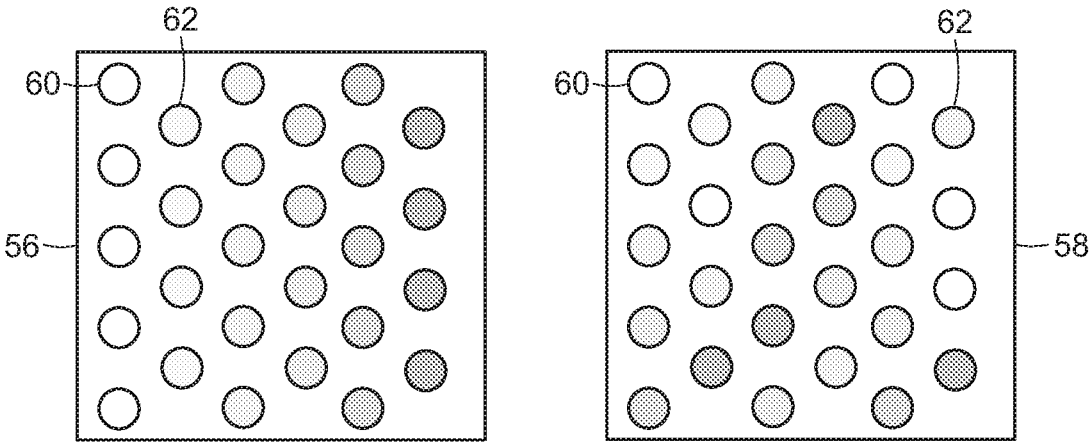


FIG. 8

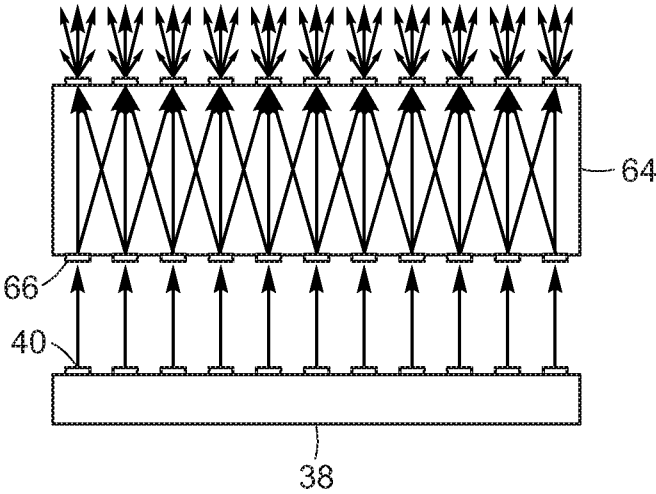


FIG. 9

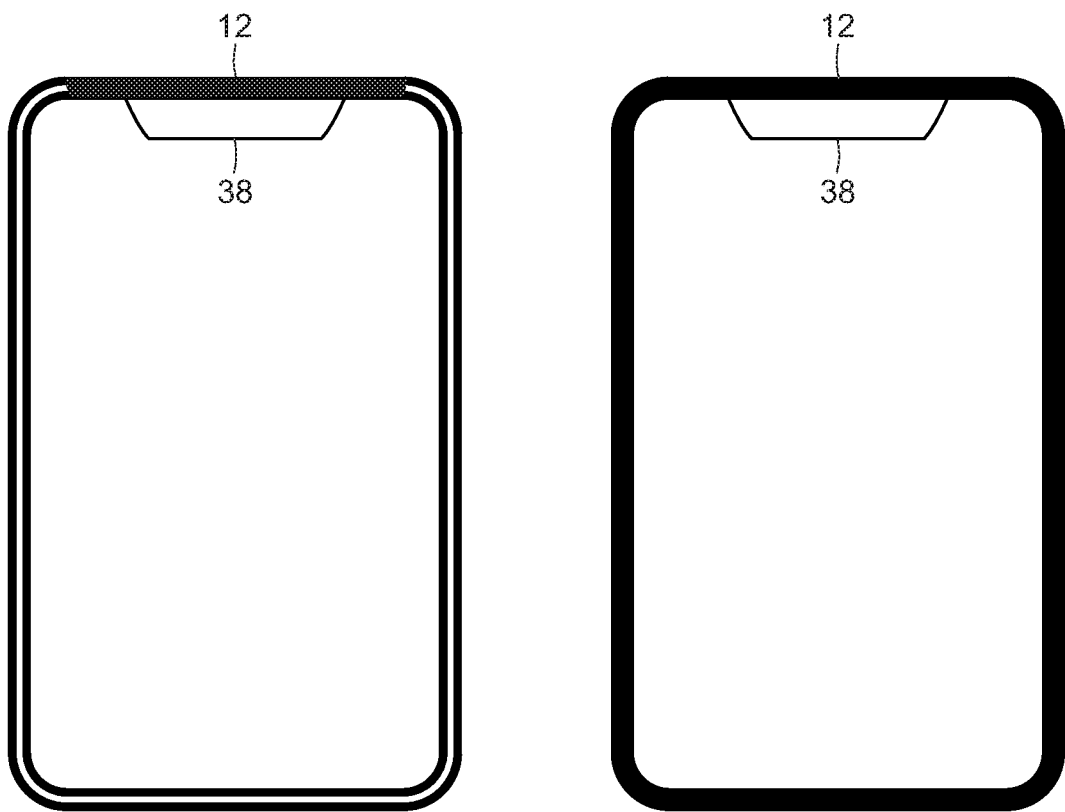


FIG. 10

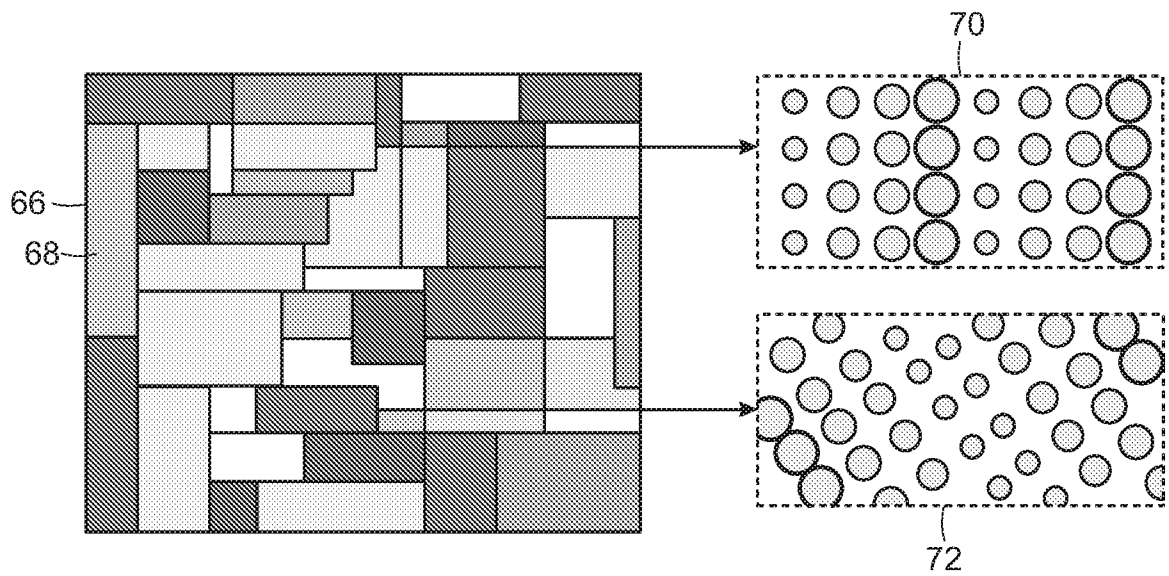


FIG. 11

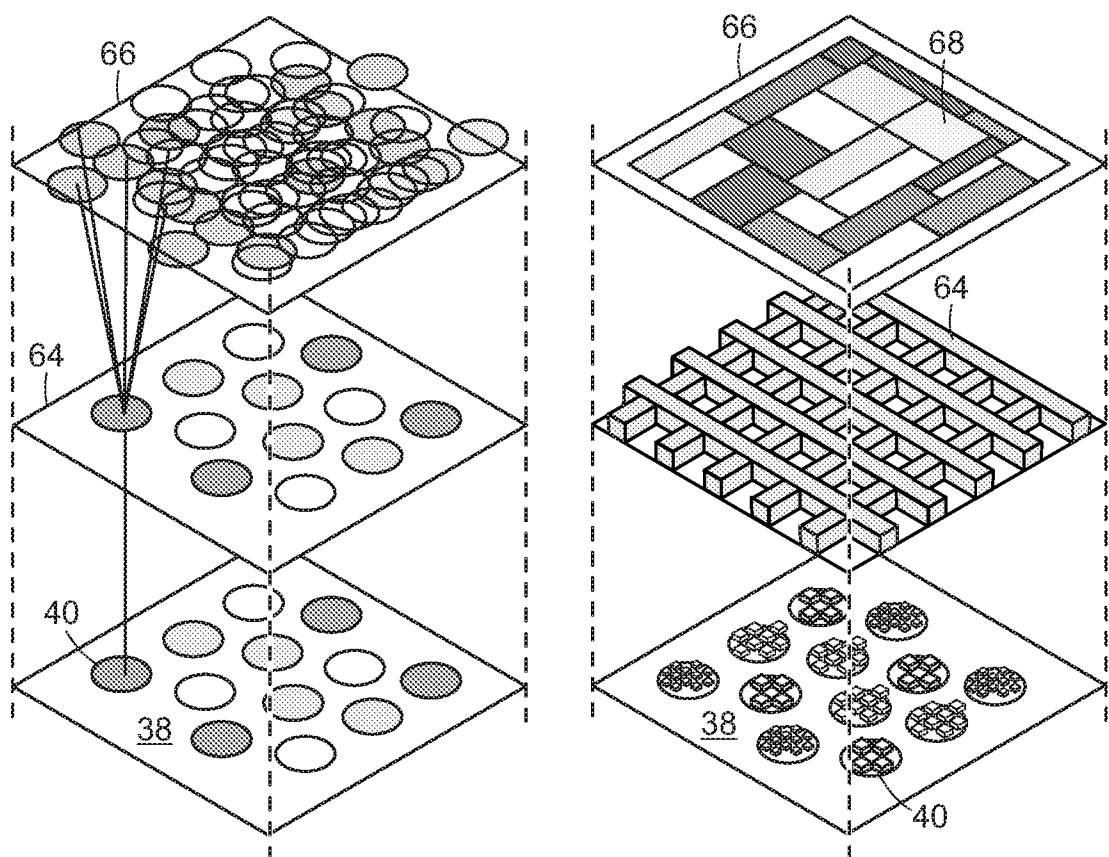


FIG. 12