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(54) **DUAL HEMISPHERICAL COLLECTORS**

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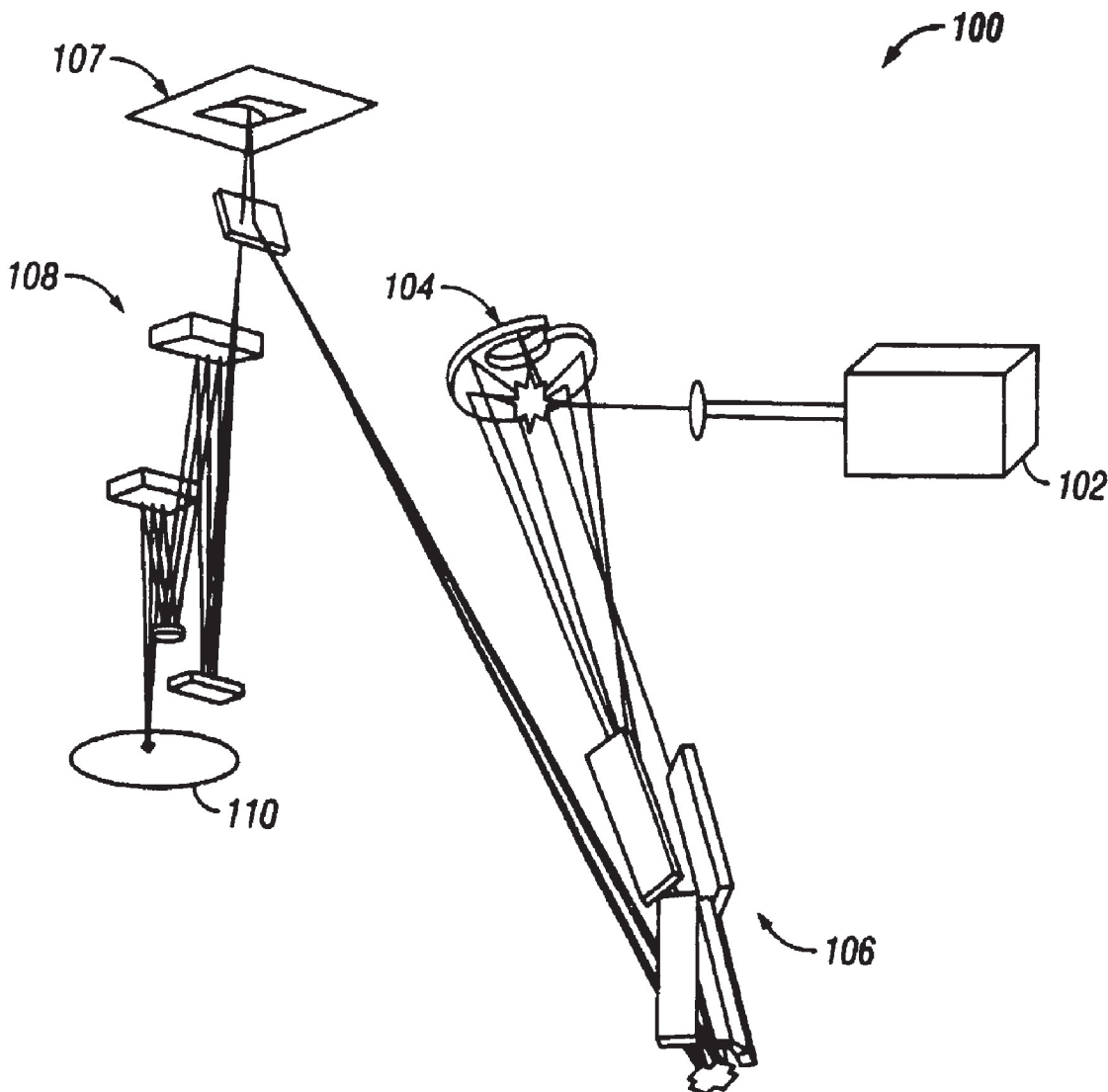
(57) **ABSTRACT**

A system and method for collecting radiation, which may be used in a lithography illumination system. The system comprises a first surface shaped to reflect radiation in a first hemisphere of a source to illuminate in a second hemisphere of the source; and a second surface shaped to reflect radiation in the second hemisphere of the source to an output plane.

(73) Assignee: **Intel Corporation**

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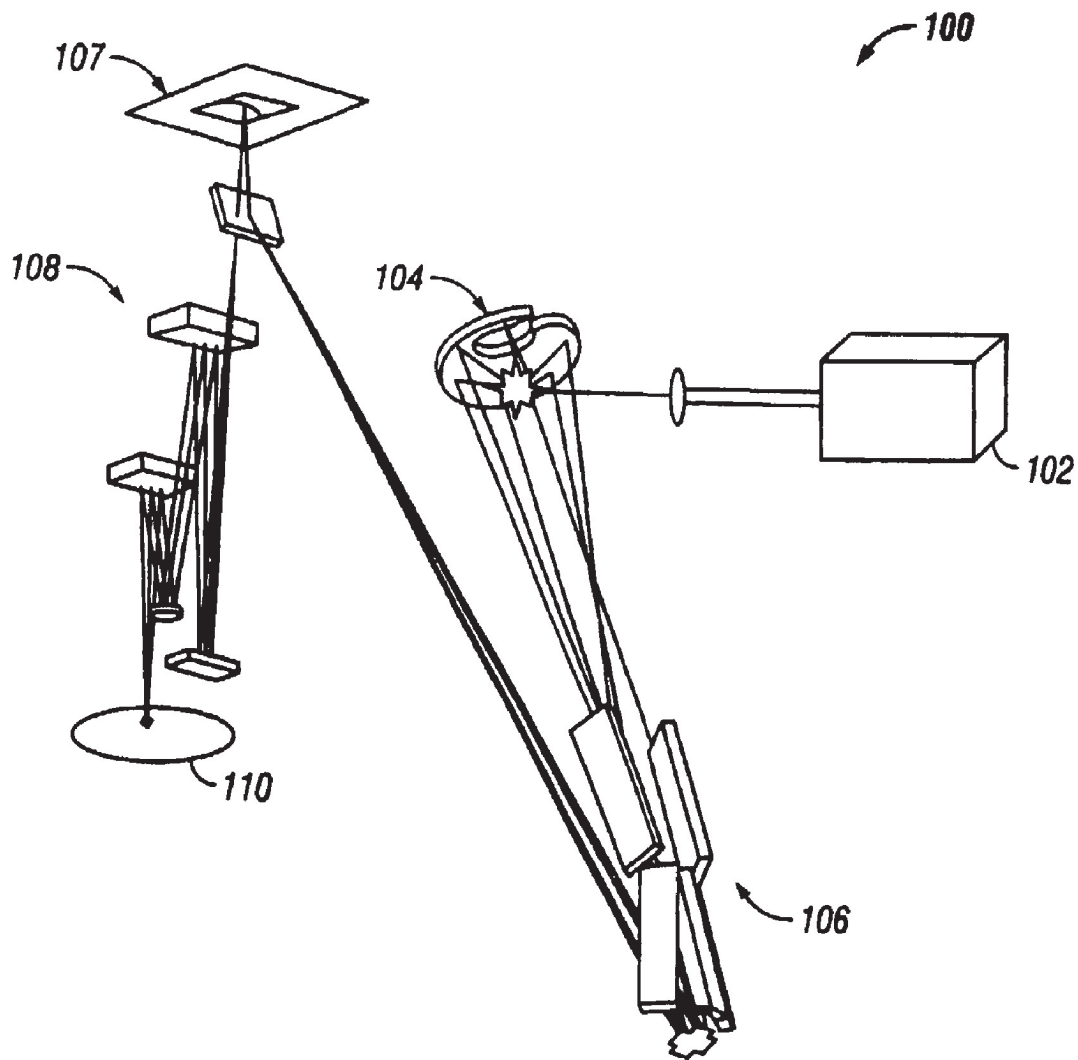


FIG. 1

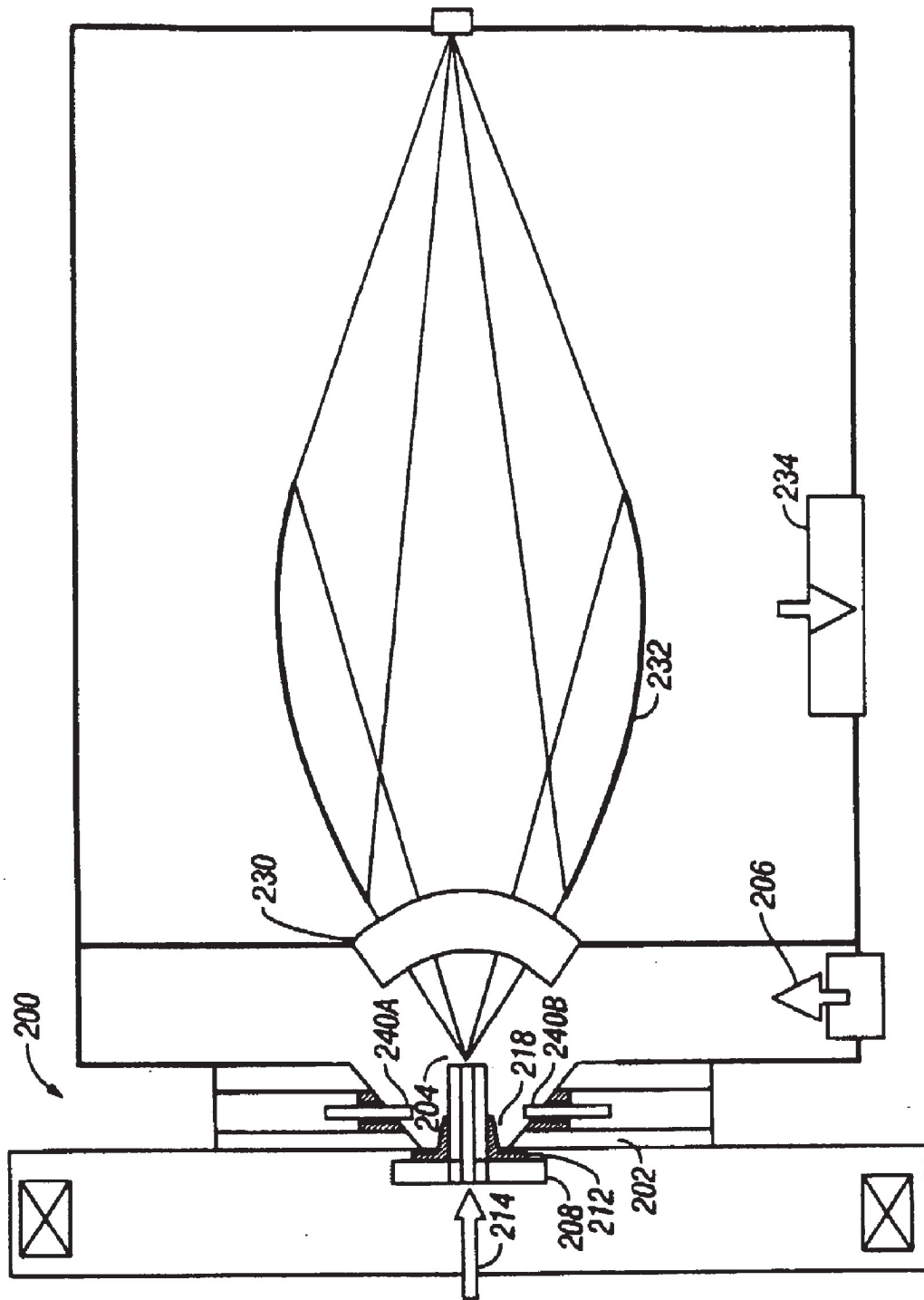
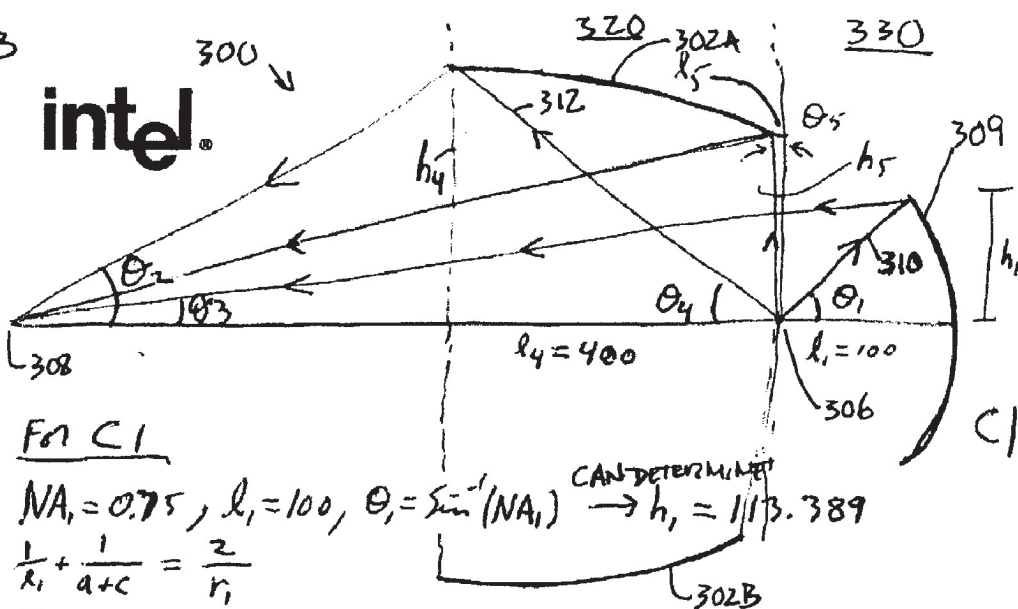


FIG. 2

FIG. 3



For C1

$NA_1 = 0.75, l_1 = 100, \theta_1 = \sin^{-1}(NA_1) \rightarrow h_1 = 1113.389$  CAN DETERMINE

$\frac{1}{r_1} + \frac{1}{a+c} = \frac{2}{r_1}$

For C2

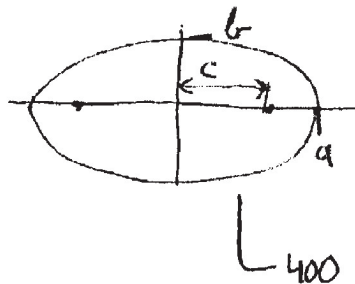
Solve  $(2c - l_4) \tan[\sin^{-1}(NA_2)] = \frac{c}{a} \sqrt{a - c + l_4} \sqrt{2a - a + c - l_4}$

$c^2 = a^2 - b^2$ , and  $2\sqrt{c^2 + b^2} = \sqrt{h_4^2 + (2c - l_4)^2} + \sqrt{h_4^2 + l_4^2}$

With  $l_4 = 400, NA_2 = \frac{0.25}{4} = 0.0625, \theta_4 \rightarrow h_4$

$\theta_4$	a	b	c	$-k = \frac{c}{a}$	$r_2$	$h_1 = a - c$	$h_1$
25°	1712.86	283.312	1689.27	0.986226	46.8607	23.5929	194.289
30°	2078.46	377.408	2043.91	0.983376	68.5298	34.5521	195.263

Rem;  $z = a(1 - \sqrt{1 - \frac{x^2}{a^2}})$ ,  $x = \frac{c}{a} \sqrt{z} \sqrt{2a - z}$

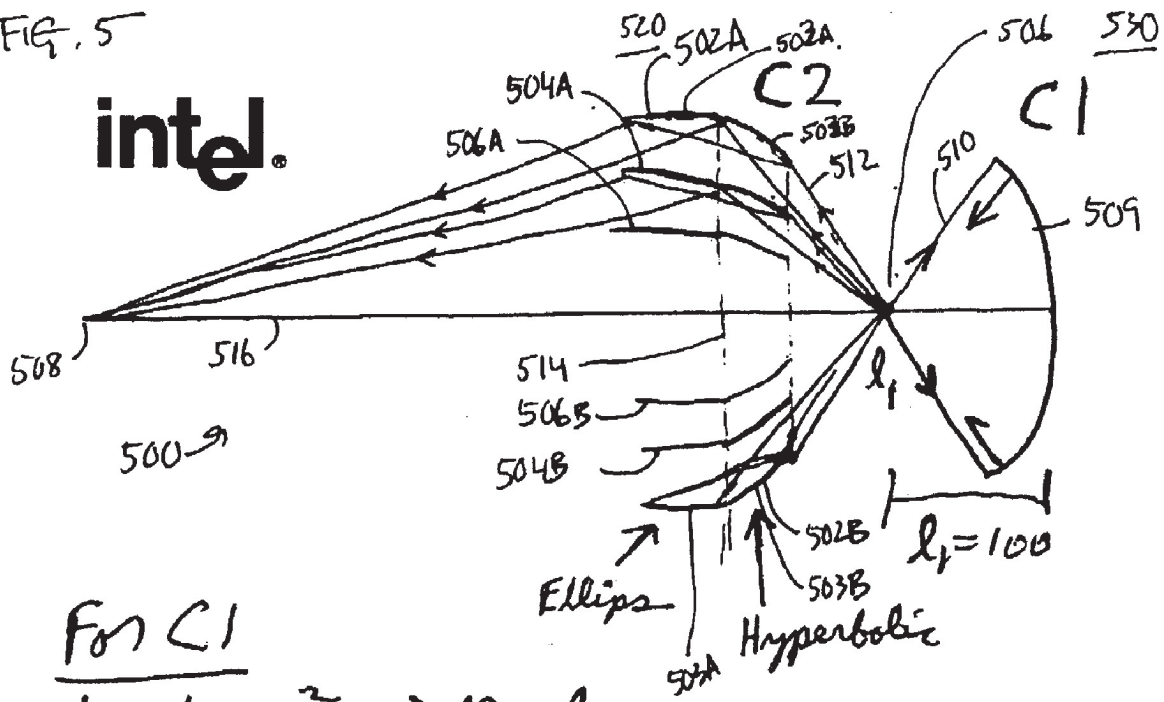


$z = \frac{x^2 / r_2}{1 + \sqrt{1 - (1+k)(x/r_2)^2}}$

FIG. 4

FIG. 5

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For  $C_1$

$$\frac{1}{l_1} + \frac{1}{l_2} = \frac{2}{r_1} \rightarrow r = l_1$$

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