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(54) **LENS, LIGHT IRRADIATION APPARATUS,
AND LASER POINTER**

(52) **U.S. Cl. 359/641**

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(57) **ABSTRACT**

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A lens, a light irradiation apparatus and a laser pointer to which the lens is applied to are provided, in which eccentricity, discrepancy of light axes, uneven gap of lens surfaces and the like are reduced without performing positioning of respective lenses; and cost of manufacturing a lens having a plurality of functions can be reduced.

(73) **Assignee: Sony Corporation**

A lens according to the present invention is the lens, in which a light diameter expanding element for expanding a diameter of incident light and a light collimating element for projecting approximately collimated light after receiving the incident light having the diameter thereof expanded by the light diameter expanding element are integrally formed in advance as a lens of one unit. According to such lens, it is possible to control occurrence of the eccentricity, the discrepancy of light axes and the uneven gap of lens surfaces due to a positioning discrepancy between respective lenses, in comparison to a lens wherein a lens as the light diameter expanding element and a lens as the light collimating element are individually formed and are combined into one body.

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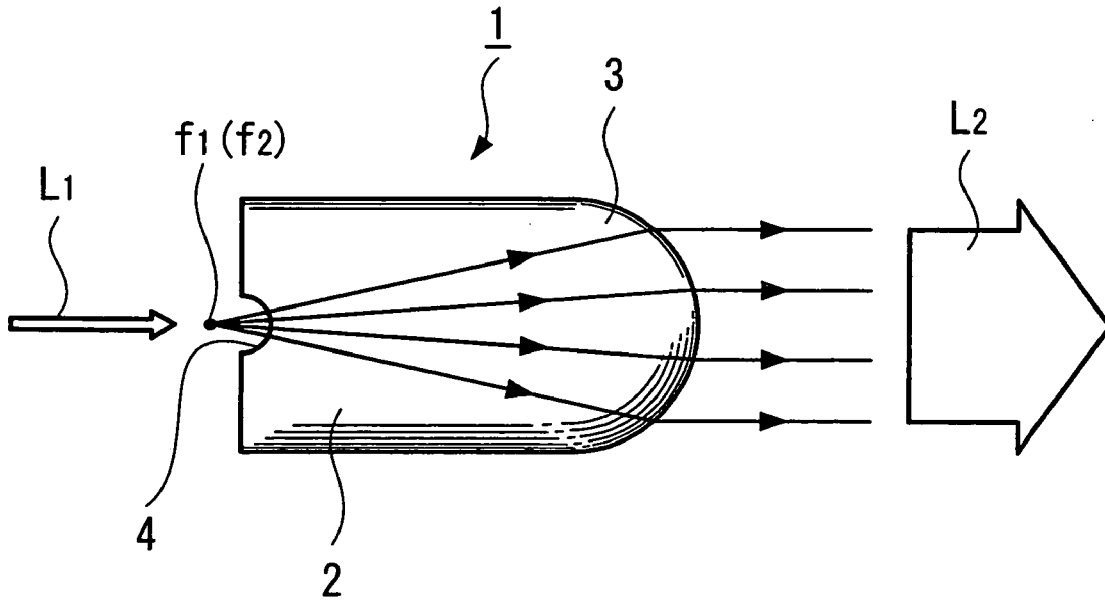


FIG. 1A FIG. 1B

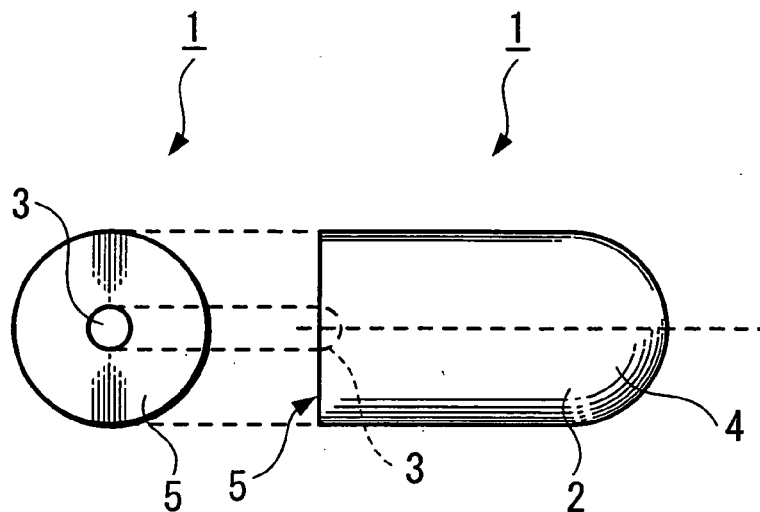


FIG. 2

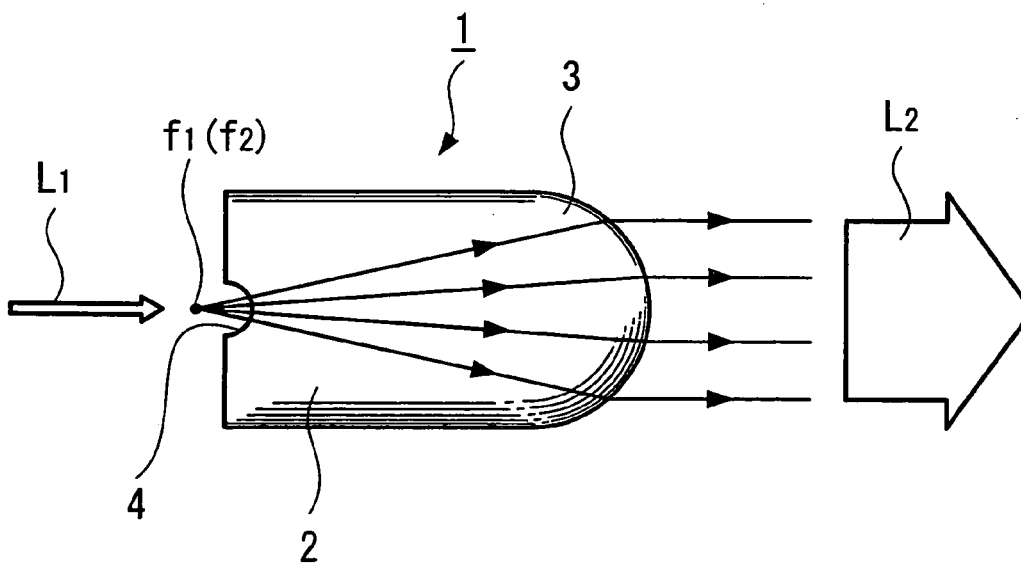


FIG. 3A FIG. 3B

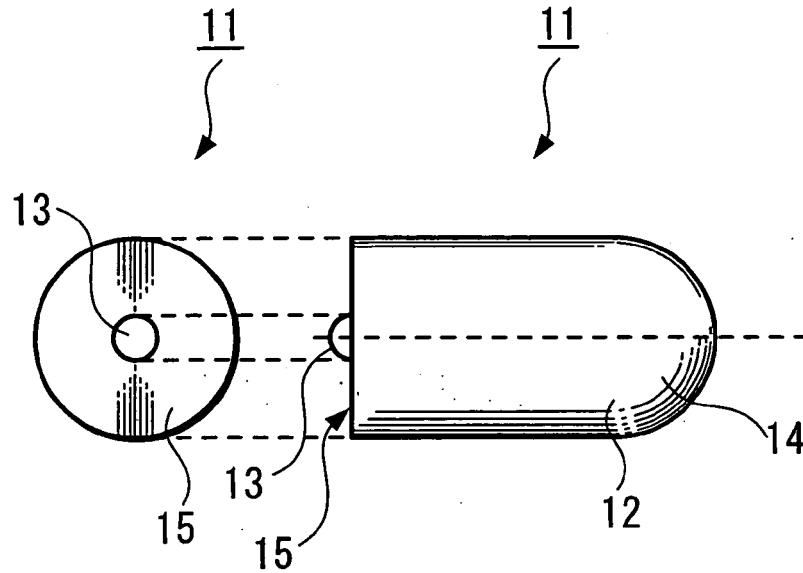


FIG. 4

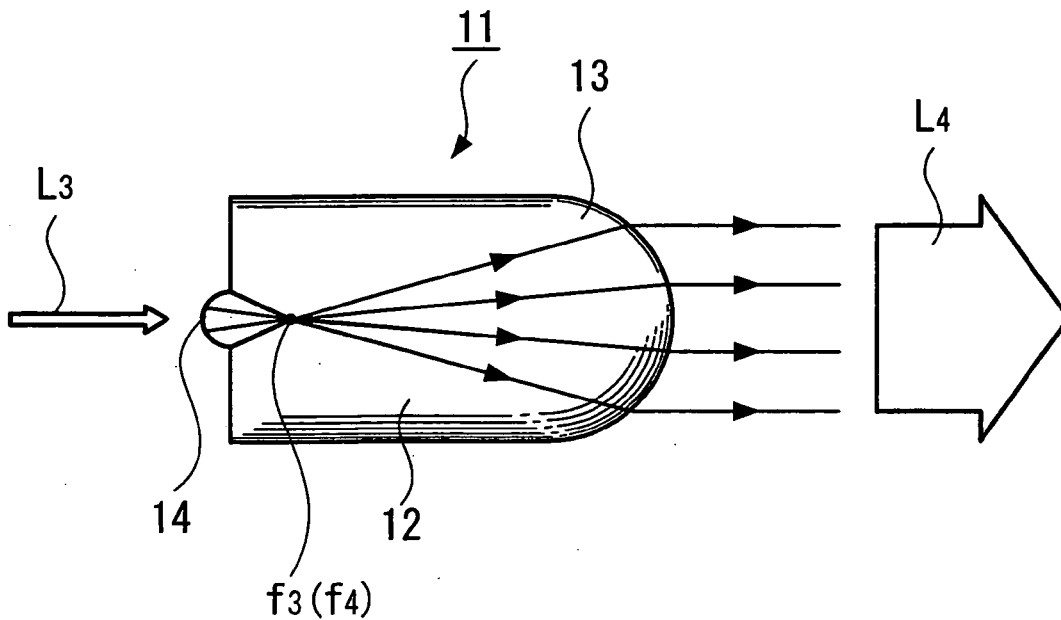


FIG. 5A FIG. 5B

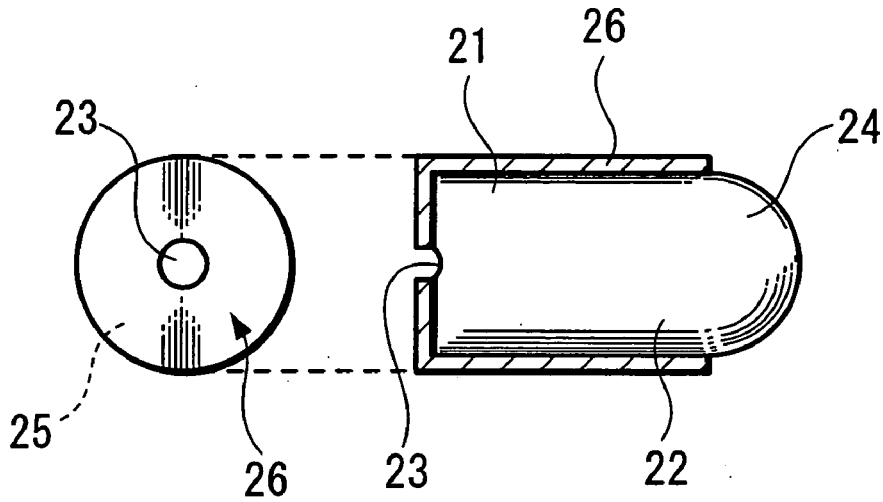


FIG. 6A FIG. 6B

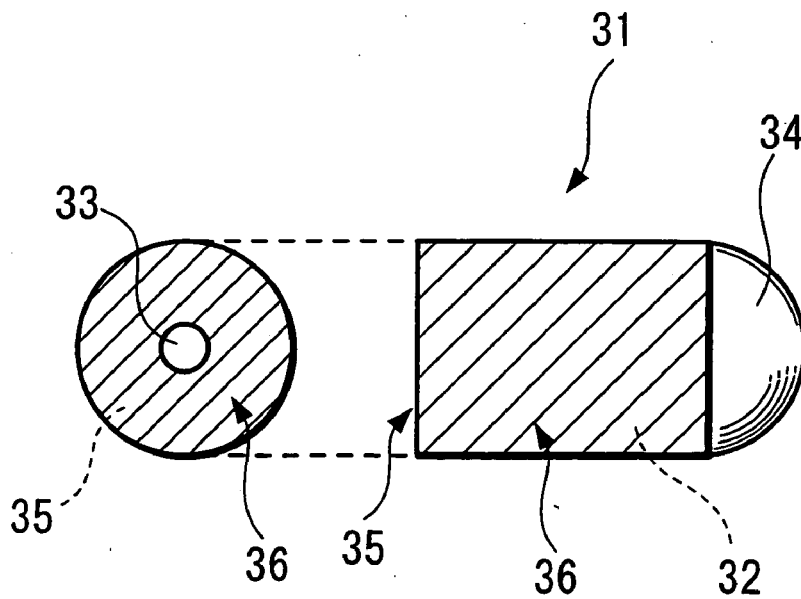
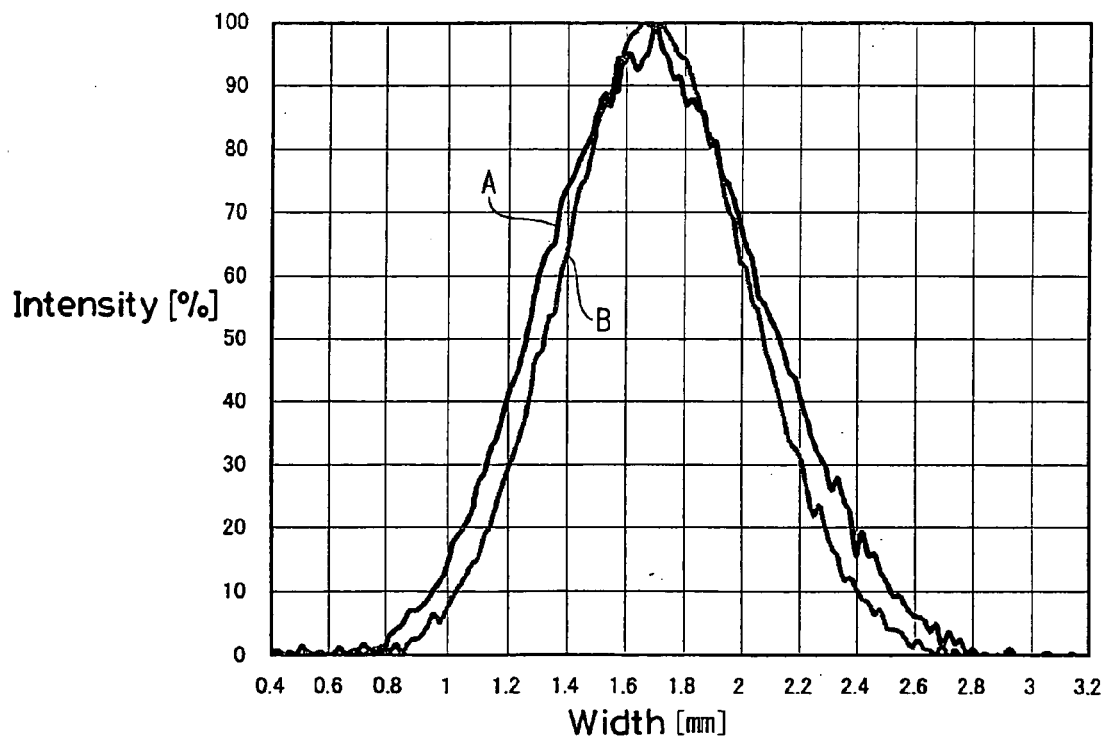


FIG. 7

A: Without Black Coating

B: With Black Coating



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