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Date of Patent:

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United States Patent [19]

Ikegame et al.

[54] OPTICAL SYSTEM SUPPORTING DEVICE

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- [73] Assignee: Olympus Optical Co., Ltd., Tokyo, Japan
- [21] Appl. No.: 607,683
- [22] Filed: Nov. 1, 1990

[30] Foreign Application Priority Data

- Nov. 2, 1989 [JP] Japan 1-285036
- [51] Int. Cl.⁶ G02B 7/02; G11B 7/00; G11B 7/09

[56] References Cited

U.S. PATENT DOCUMENTS

4,702,555	10/1987	Iguma et al 359/814
4,766,583	8/1988	Oinoue et al 350/247
4,861,138	8/1989	Suzuki 359/824
4,911,534	3/1990	Henegouwen et al 350/255
4,922,477	5/1990	Miura
5,018,836	5/1991	Noda et al 350/255
5,056,891	10/1991	Masunaga 369/44.15
5,073,883	12/1991	Mitsunori 359/814

FOREIGN PATENT DOCUMENTS

59-221839	12/1984	Japan .
60-197942	10/1985	Japan .
62-145539		
173641	7/1987	Japan 369/44.15
		Japan 369/44.15
		Japan 369/44.16
150732	6/1991	Japan 369/44.15

5,428,481

Jun. 27, 1995

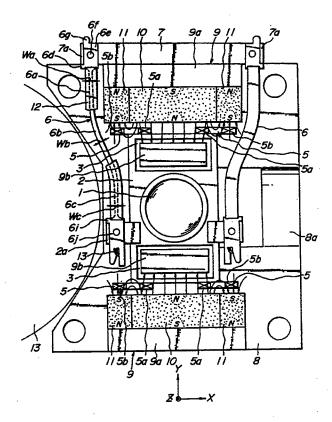
Primary Examiner-Loha Ben

Assistant Examiner—Thong Nguyen Attorney, Agent, or Firm—Stevens, Davis, Miller & Mosher

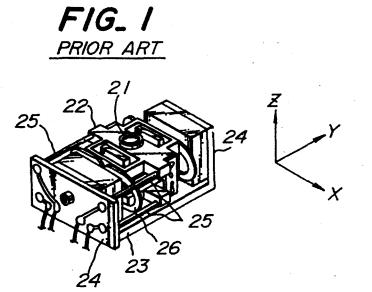
[57] ABSTRACT

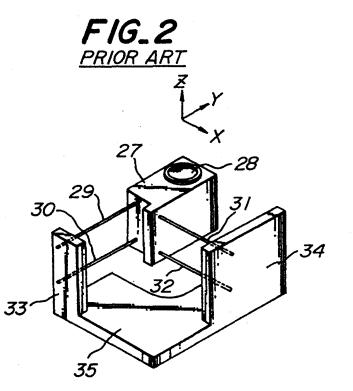
An optical system supporting device in which an optical system holding member is supported by springs to be movable in focusing and tracking directions; and each of the springs has at least one portion which is oriented parallel with a tangential direction and one bending portion which is bent toward an optical axis of the optical system. Therefore, the holding member is made small in width with respect to the tracking direction; and thus the holding member can be made light in weight such that the driving sensitivity of the holding member is improved.

14 Claims, 6 Drawing Sheets



LG Electronics, Inc. et al. **FYHIRIT 1005**





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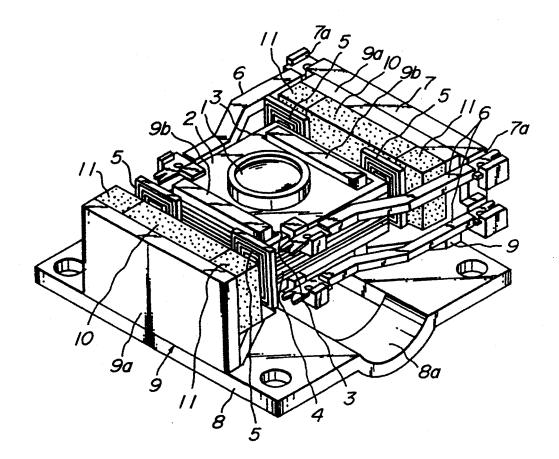
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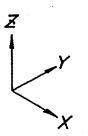
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FIG_3

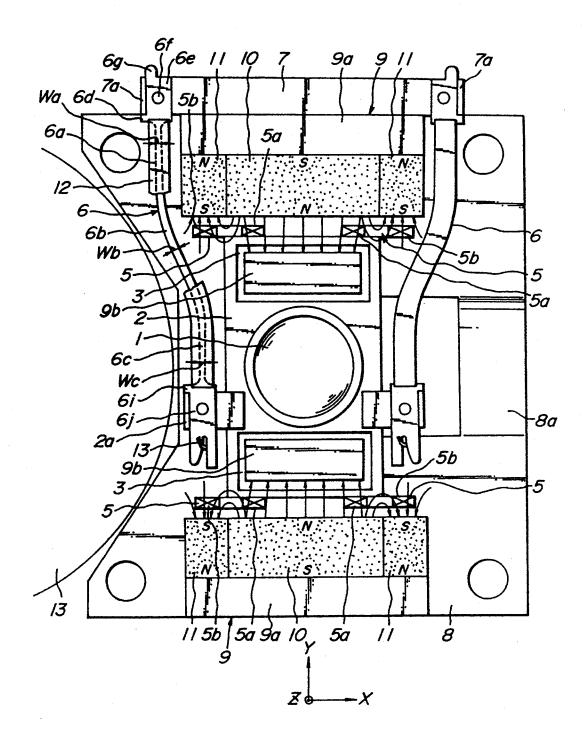




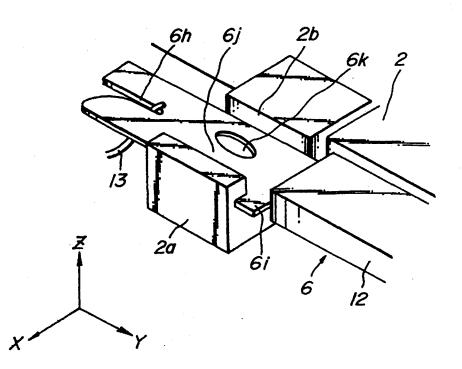
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Α

FIG_4



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