United States Patent [19]

Nassimbene

[11] **4,440,515**

[45] **Apr. 3, 1984**

[54] **KEYBAR KEYBOARD**

[75] Inventor: **Ernie G. Nassimbene,** Los Gatos, Calif.

[73] Assignee: **International Business Machines Corporation,** Armonk, N.Y.

[21] Appl. No.: **383,921**

[22] Filed: **Jun. 1, 1982**

[51] **Int. Cl.**[3] **B41J 5/28**

[52] **U.S. Cl.** ..... **400/479;** 400/485; 400/490; 340/365 R; 200/5 R

[58] **Field of Search** ..... 400/472, 473, 474, 477, 400/478, 479, 479.1, 479.2, 485, 490, 492, 496; 178/17 C, 101-110; 200/5 R, 5 A; 235/145 R; 340/365 R, 365 C, 365 P, 365 L

[56] **References Cited**

U.S. PATENT DOCUMENTS

1,308,411	7/1919	Going	400/276.2
3,129,660	4/1964	Miller	400/472
3,166,638	1/1965	Hills	178/108
3,369,643	2/1968	Avgerinos et al.	340/365 P
3,678,614	7/1972	Nagel	235/145 R
3,794,905	8/1976	Johnson	400/496
3,938,642	2/1976	Van Rumpt et al.	178/17 C
3,964,594	6/1976	Gabbrielli et al.	400/472
4,032,729	6/1977	Koistinen	200/5 A
4,039,068	8/1977	Giorza et al.	400/491
4,042,439	8/1977	Pounds	156/292
4,085,302	4/1978	Zenk et al.	340/365 R
4,186,638	2/1980	Iijima	200/5 A
4,307,970	12/1981	McGaughey, Jr. et al.	400/473
4,363,942	12/1982	Deeg et al.	400/479
4,381,500	4/1983	Urata et al.	340/365 R

OTHER PUBLICATIONS

IBM Technical Disclosure Bulletin, vol. 17, No. 5, Oct. 1974, p. 1479, "Low—Cost Key—Top Structure For Serpentine Strip Keyboard", E. E. Long.

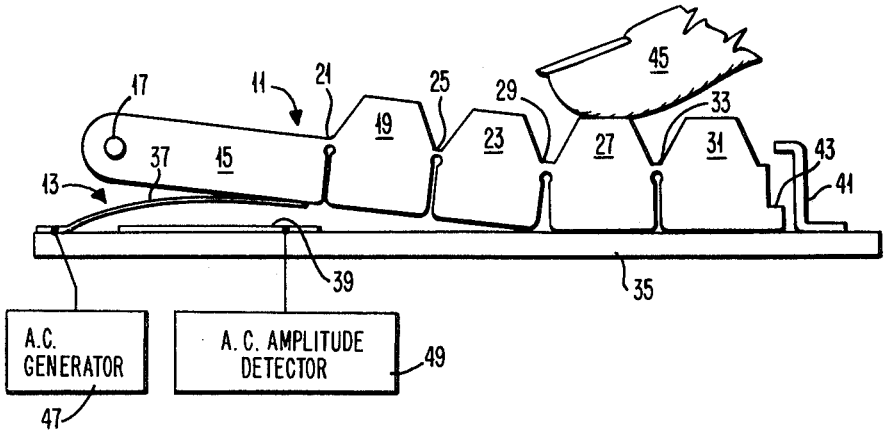
IBM Technical Disclosure Bulletin, vol. 18, No. 4, Sep. 1975, pp. 1138-1139, "Magnetic Floating Elastic Diaphragm Switch", R. J. Sturm.

IBM Technical Disclosure Bulletin, vol. 16, No. 3, Aug. 1973, p. 954, "Molded Keyboard Structure", L. C. Bixler.

IBM Technical Disclosure Bulletin, vol. 10, No. 12, May 1968, p. 1844, "Unitary Plastic Keylever System", N. L. Anglin, et al.

Primary Examiner—Edgar S. Burr
Assistant Examiner—David A. Wiecking
Attorney, Agent, or Firm—John W. Girvin, Jr.

[57] **ABSTRACT**

A keyboard (**61**) includes plural keybar actuators (**11**) each including plural keys (**19, 23, 27, 31**) hingedly interconnected (**25, 29, 33**) and a sensing device (**13**). The keys of a keybar actuator are all actuated by a common finger (**45**) in touch typing and therefore are not jointly actuated. Depression of one key causes the keybar actuator (**11**) to pivot and the sensing device (**13**) indicates which key is depressed depending upon the amount of keybar actuator rotation. Alternate sensing devices include individual contact switches (**79-81**) associated with each key.

6 Claims, 6 Drawing Figures