US005828241A

# United States Patent [19]

## Sukegawa

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[45] **Date of Patent:** Oct. 27, 1998

[54] **SIGNAL TRANSMISSION CIRCUIT PROVIDING AMPLIFIED OUTPUT FROM POSITIVE FEEDBACK OF INTERMEDIATE AMPLIFIER CIRCUIT**

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[73] Assignee: **Texas Instruments Incorporated**, Dallas, Tex.

[21] Appl. No.: **658,766**

[22] Filed: **Jun. 5, 1996**

**Related U.S. Application Data**

[63] Continuation of Ser. No. 393,525, Feb. 23, 1995, abandoned, which is a continuation of Ser. No. 979,085, Nov. 19, 1992, abandoned.

[30] **Foreign Application Priority Data**

Jan. 22, 1991 [JP] Japan ..................................... 3-334121

[51] **Int. Cl.⁶** ...................................................... **H03K 5/22**
[52] **U.S. Cl.** ................................ **327/67**; 327/55; 327/57; 327/208; 327/391
[58] **Field of Search** ................................... 307/530, 279, 307/572, 443; 365/203, 205; 327/51, 54, 55, 57, 65, 67, 206, 208, 379, 389, 391; 326/21, 23, 24

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[57] **ABSTRACT**

A signal transmission circuit which enables the distance of signal transmission as measured by the length of the wiring electrically connecting a driver circuit and a receiver circuit of the signal transmission circuit to be increased, while the signal delay and power consumption are reduced. The signal transmission circuit includes the driver circuit, the receiver circuit, an equalizer circuit that flattens the output of the driver circuit, and an intermediate amplifier circuit. The intermediate amplifier circuit is connected to input/output shared terminals in the wiring that connects the driver circuit and the receiver circuit. With the aid of the positive feedback of the intermediate amplifier circuit, a differential signal output from the driver circuit is amplified and then transmitted to the receiver circuit.
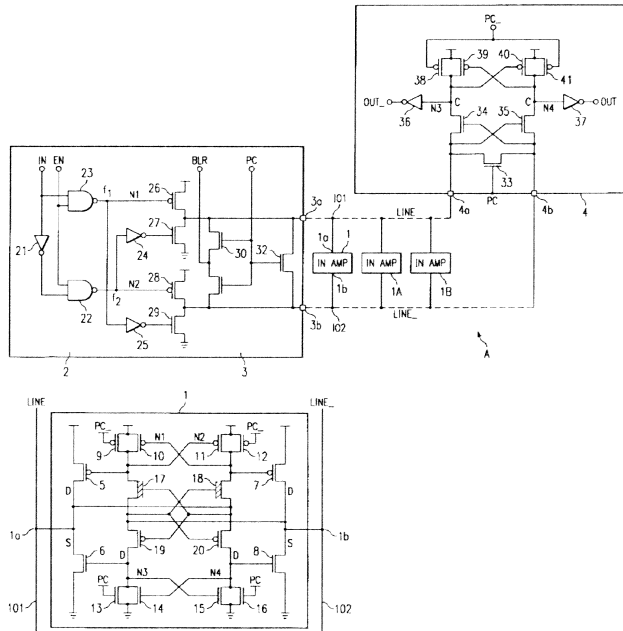
**4 Claims, 7 Drawing Sheets**



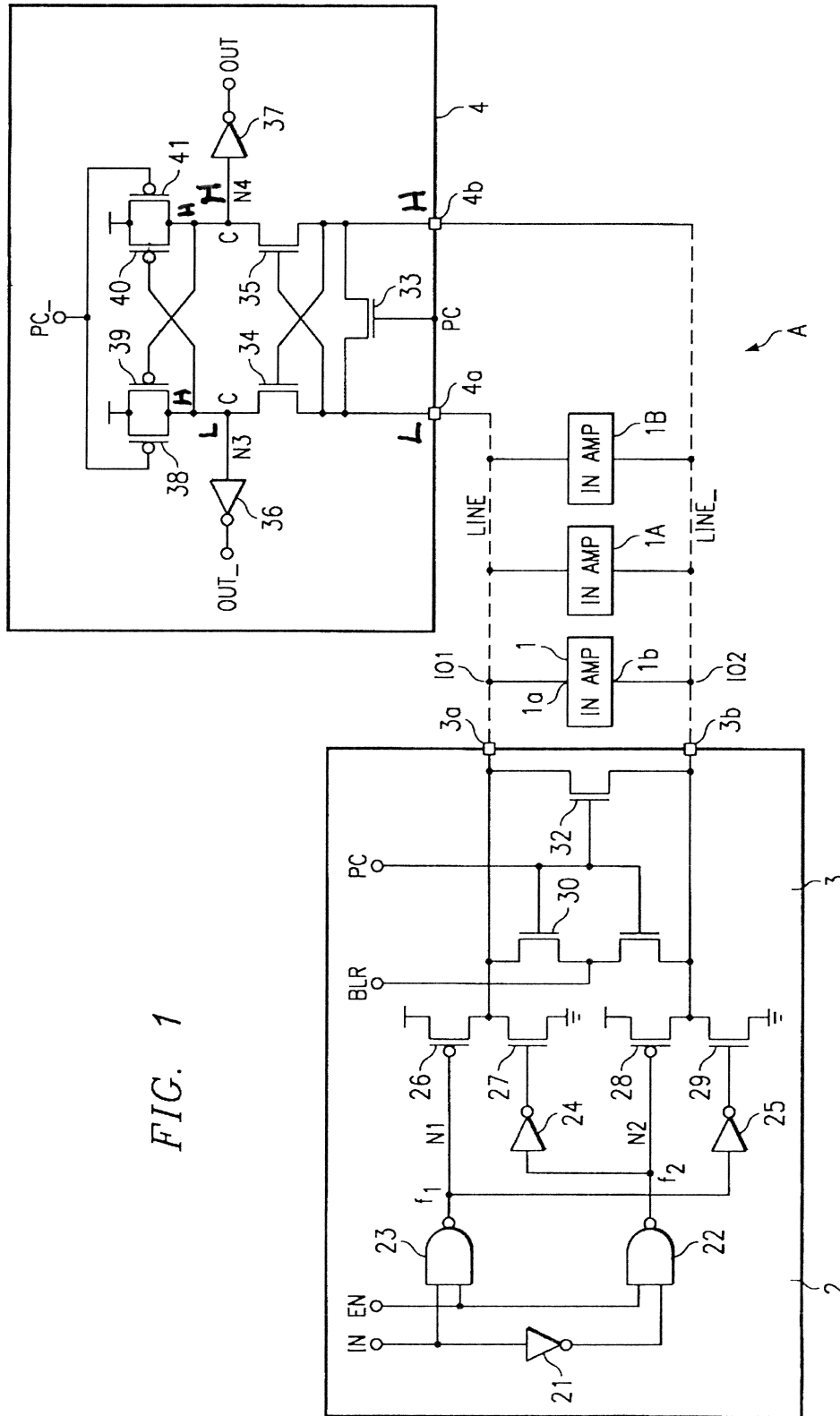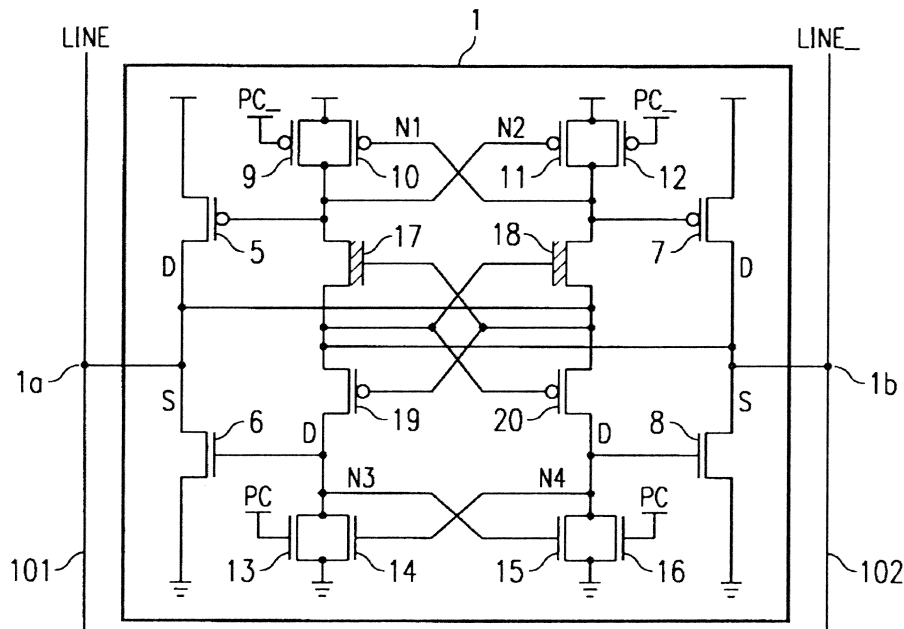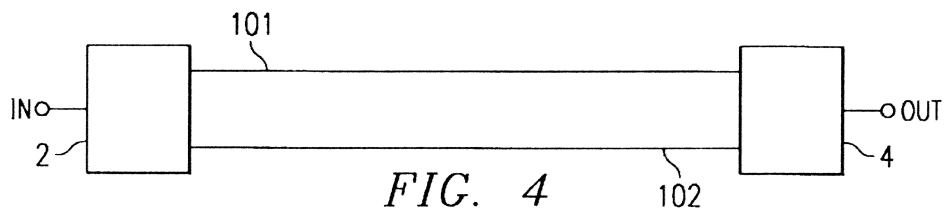EXHIBIT 1021
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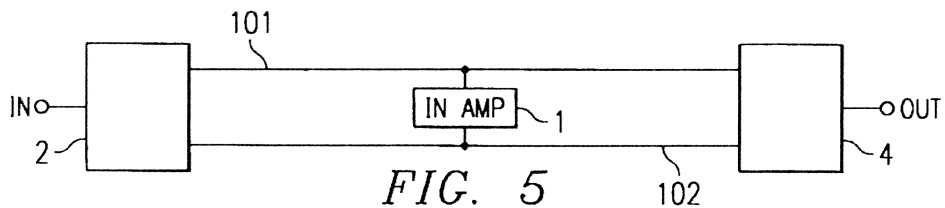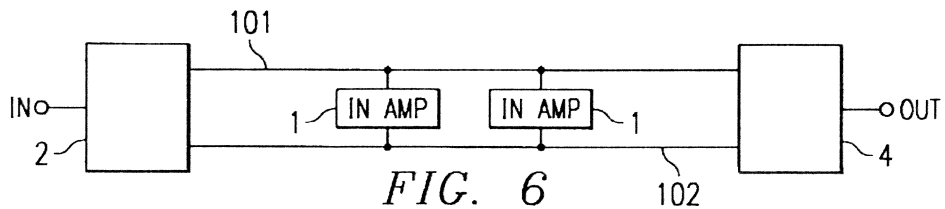K. KIDWELL, RMR, CRR, CLR

*FIG. 1*

FIG. 2



FIG. 4



FIG. 5



FIG. 6
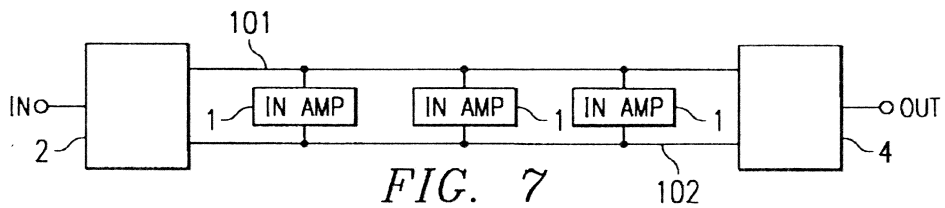


FIG. 7

*FIG. 3*

FIG. 8



FIG. 9

# DOCKET ALARM
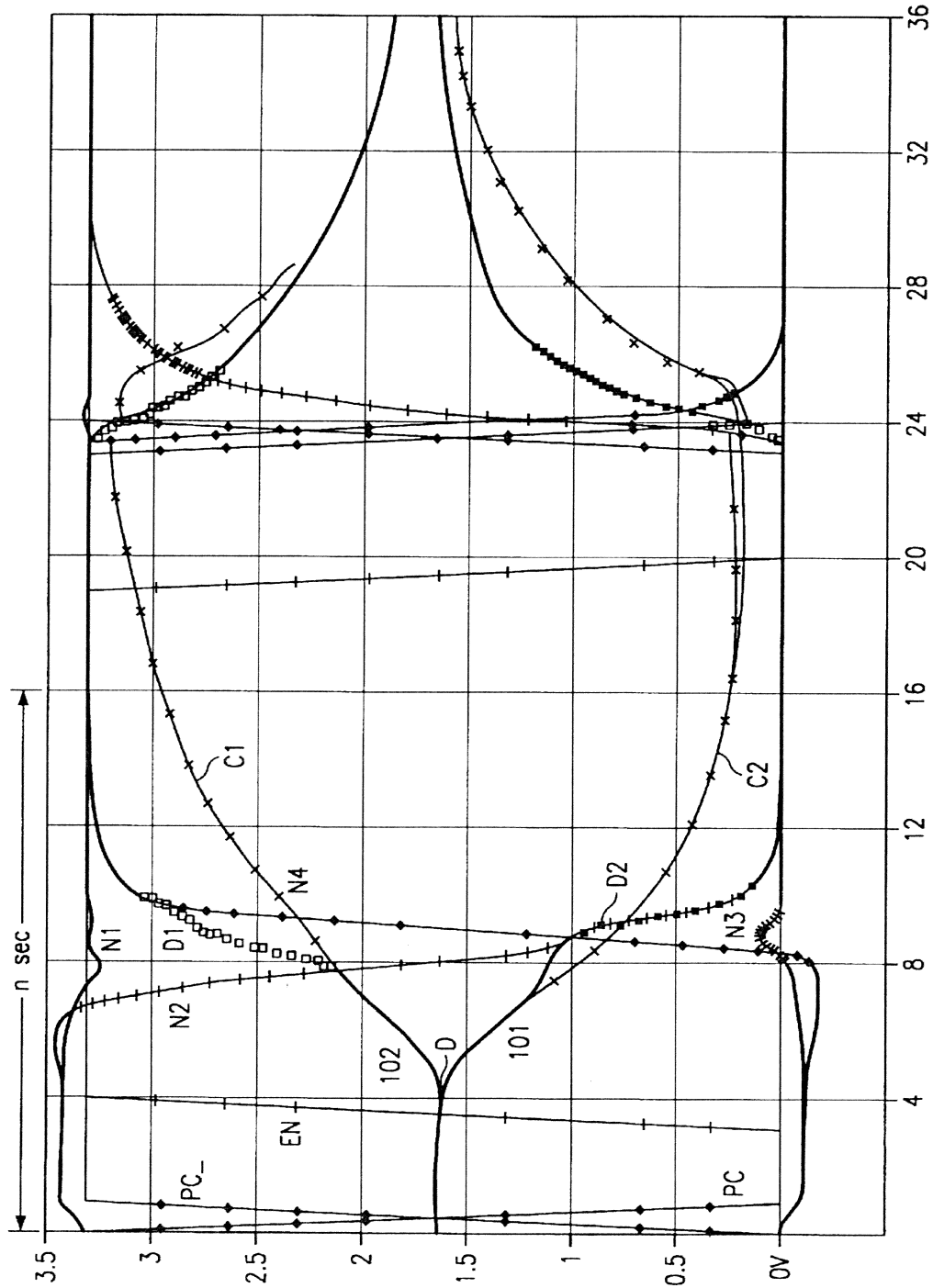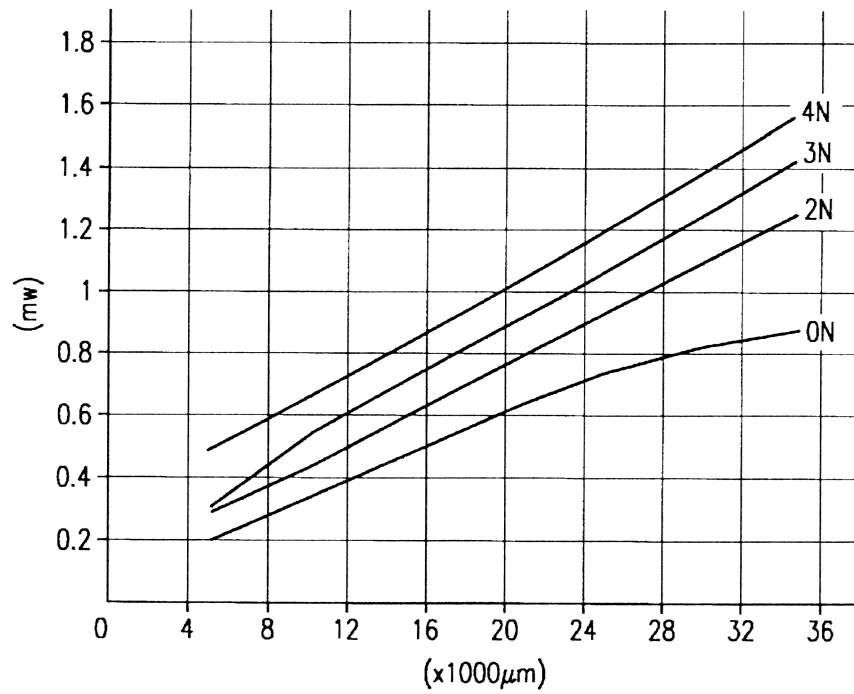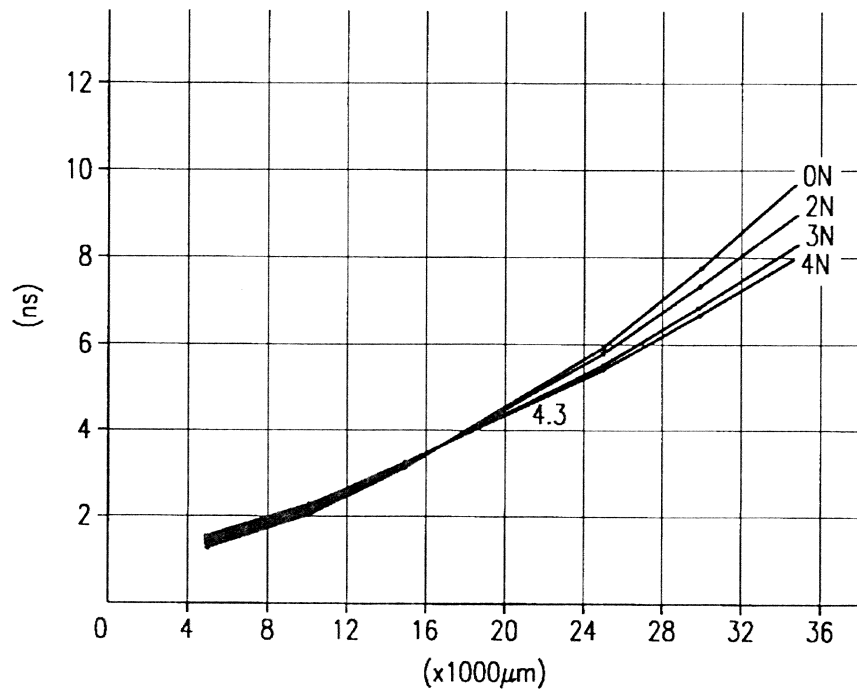
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