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# United States Patent [19] Miyashita

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[54] **LIQUID CRYSTAL VIDEO PROJECTOR HAVING LAMP AND COOLING CONTROL AND REMOTE OPTICS AND PICTURE ATTRIBUTE CONTROLS**

[75] Inventor: **Kiyoshi Miyashita, Suwa, Japan**  
[73] Assignee: **Seiko Epson Corporation, Tokyo, Japan**

[21] Appl. No.: **814,330**  
[22] Filed: **Dec. 23, 1991**

### Related U.S. Application Data

[63] Continuation of Ser. No. 605,292, Oct. 29, 1990, abandoned.

### [30] Foreign Application Priority Data

Oct. 31, 1989 [JP] Japan ..... 1-283532

[51] Int. Cl.<sup>5</sup> ..... **H04N 5/74; G03B 21/00**  
[52] U.S. Cl. .... **358/236; 315/225; 352/140; 353/57; 353/85; 353/101; 358/194.1**  
[58] Field of Search ..... **353/52-61, 353/85, 101; 352/139, 140, 198, 202, 203; 358/194.1, 231, 232, 236, 60; 315/200 R, 209 R, 129, 133, 134, 225**

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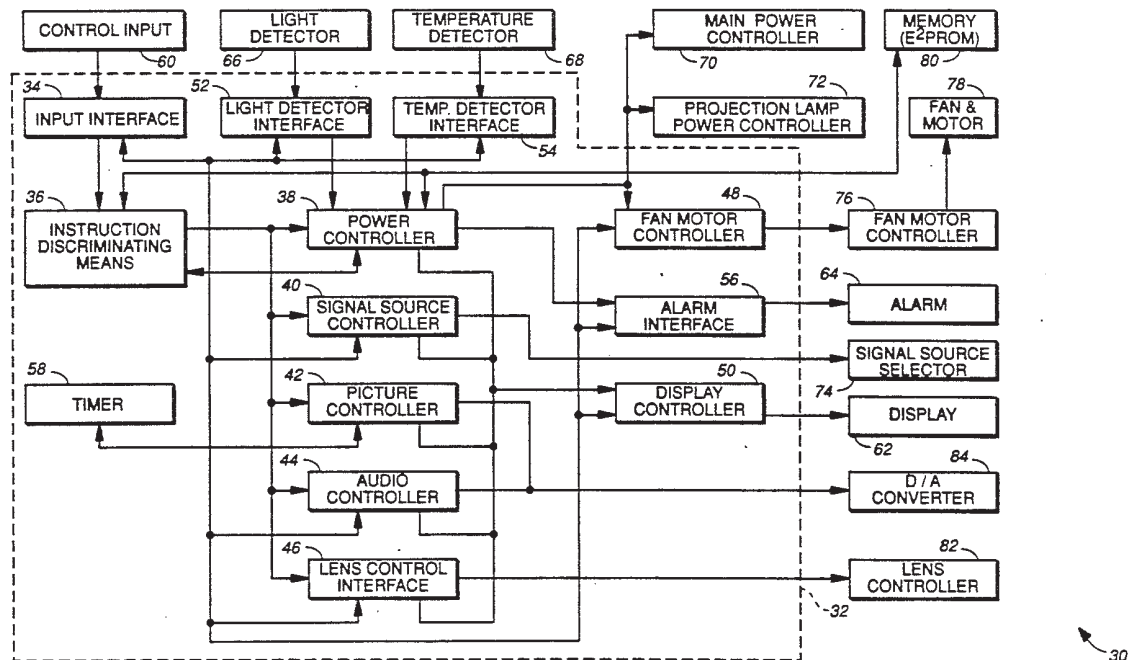
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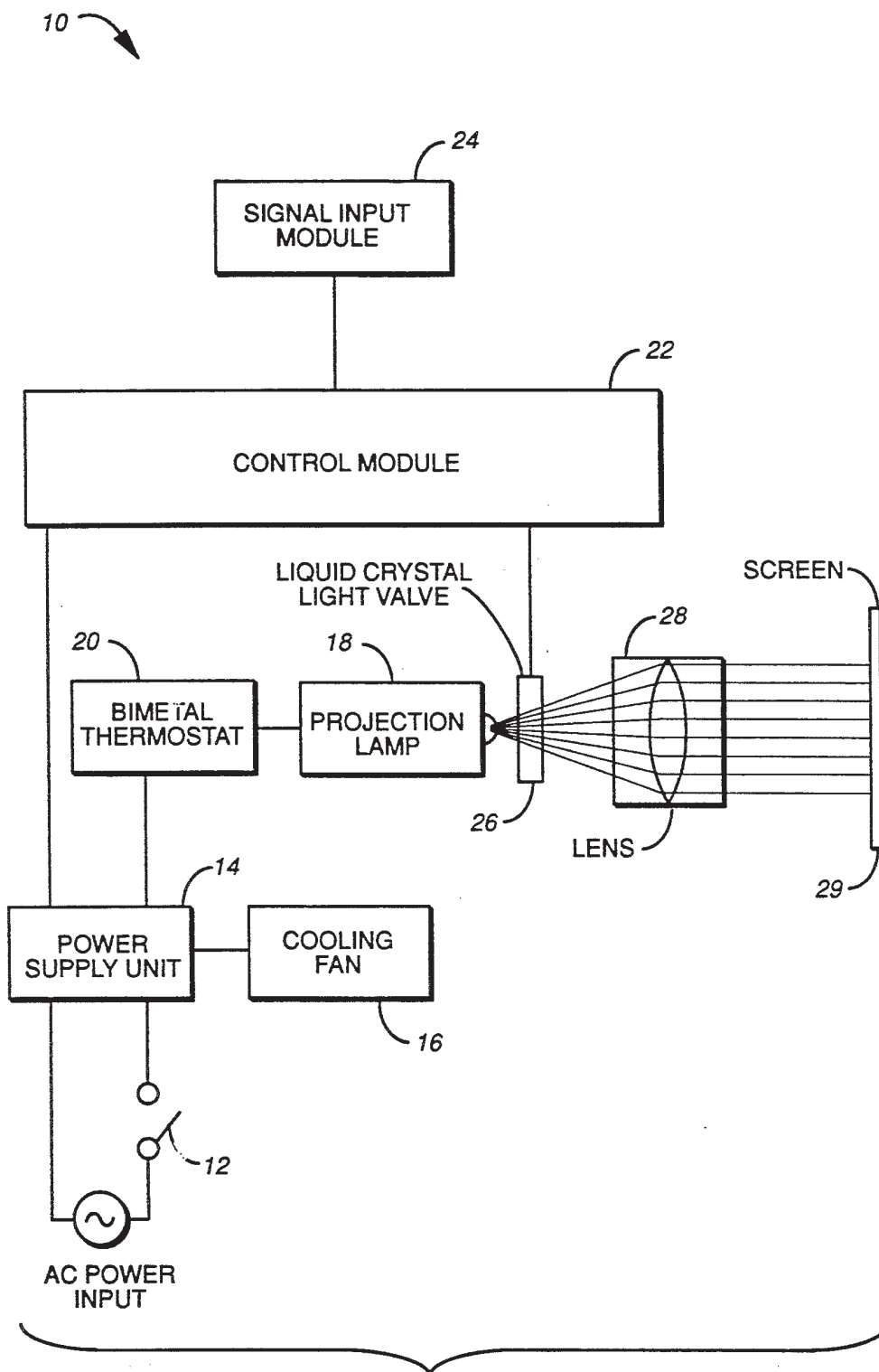
*Primary Examiner*—James J. Groody  
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### [57] ABSTRACT

A video projection system having a liquid crystal panel with a video image, a projection lamp with ON/OFF control, a zoom lens with a zoom control mechanism, a focusing lens with a focusing control mechanism, an audio system with a volume control, a projection-lamp light detector, a heat sensor, a variable-speed cooling fan, a control module having a microprocessor and a digital-to-analog converter, a display, a keypad, an alarm/annunciator, a power supply with ON/OFF control, and an infrared based remote control system able to control power ON/OFF, zoom, focus, picture, and sound volume.

**29 Claims, 38 Drawing Sheets**





**FIG. 1**  
**(prior art)**

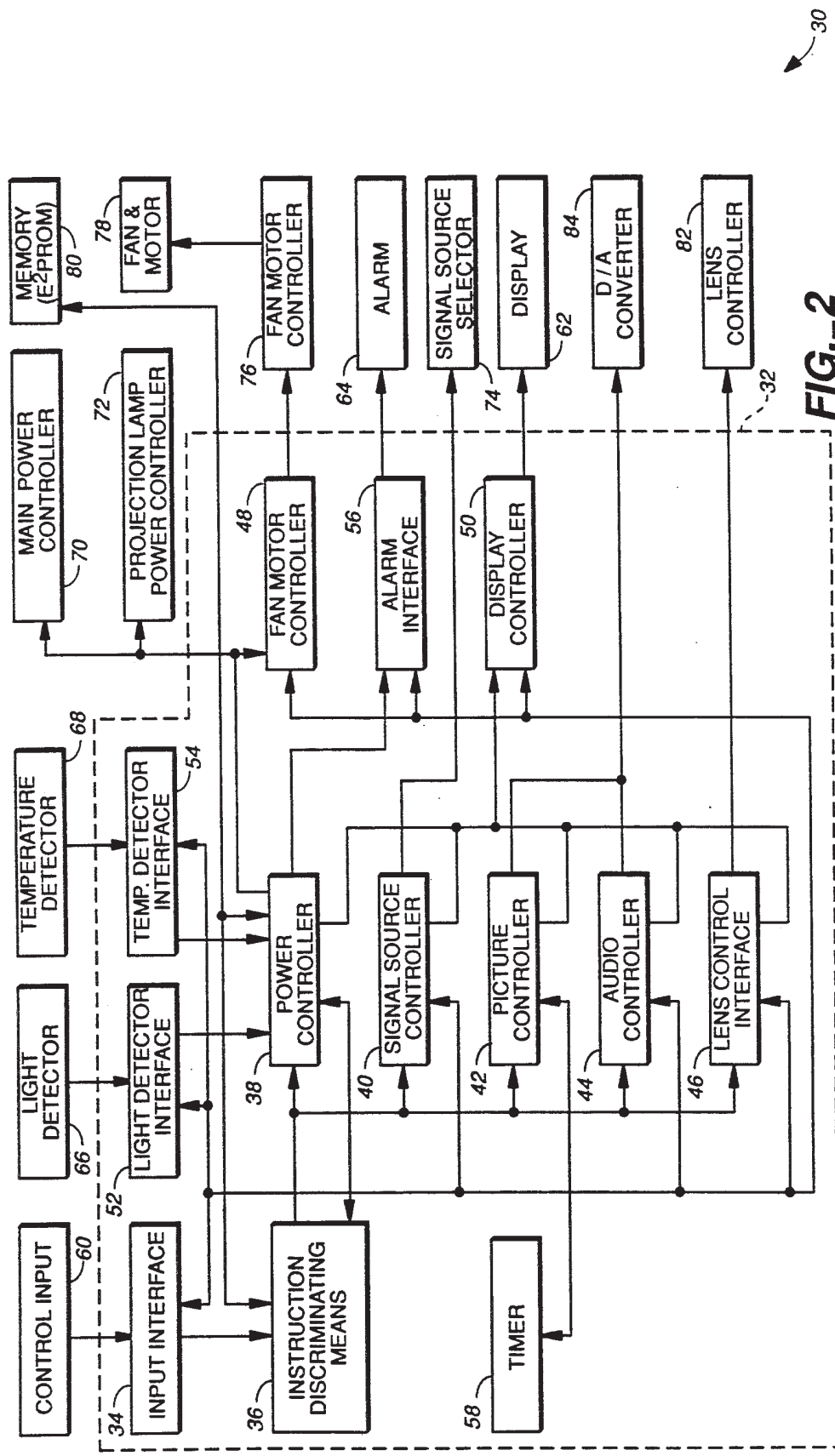


FIG. 2

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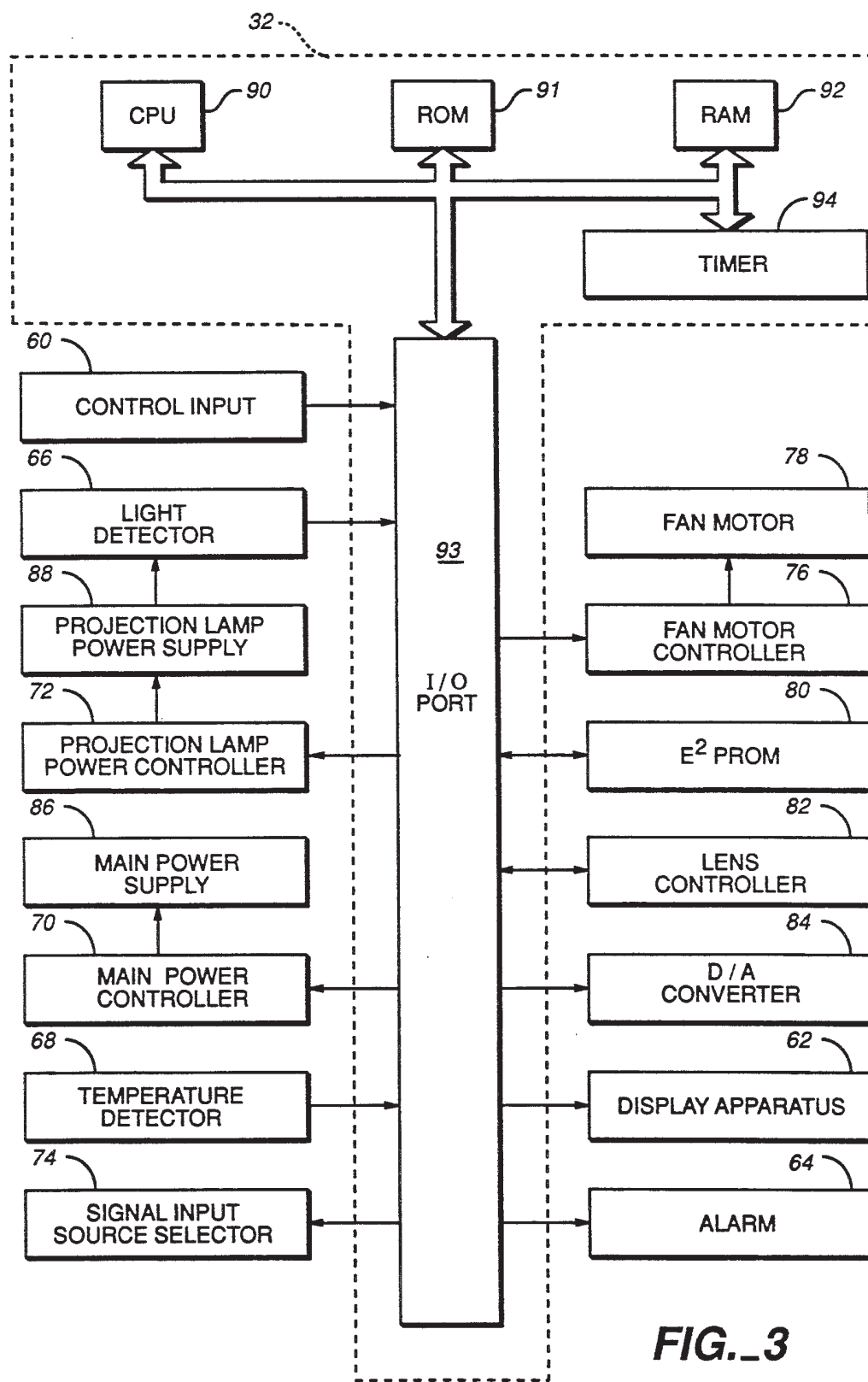


FIG. 3

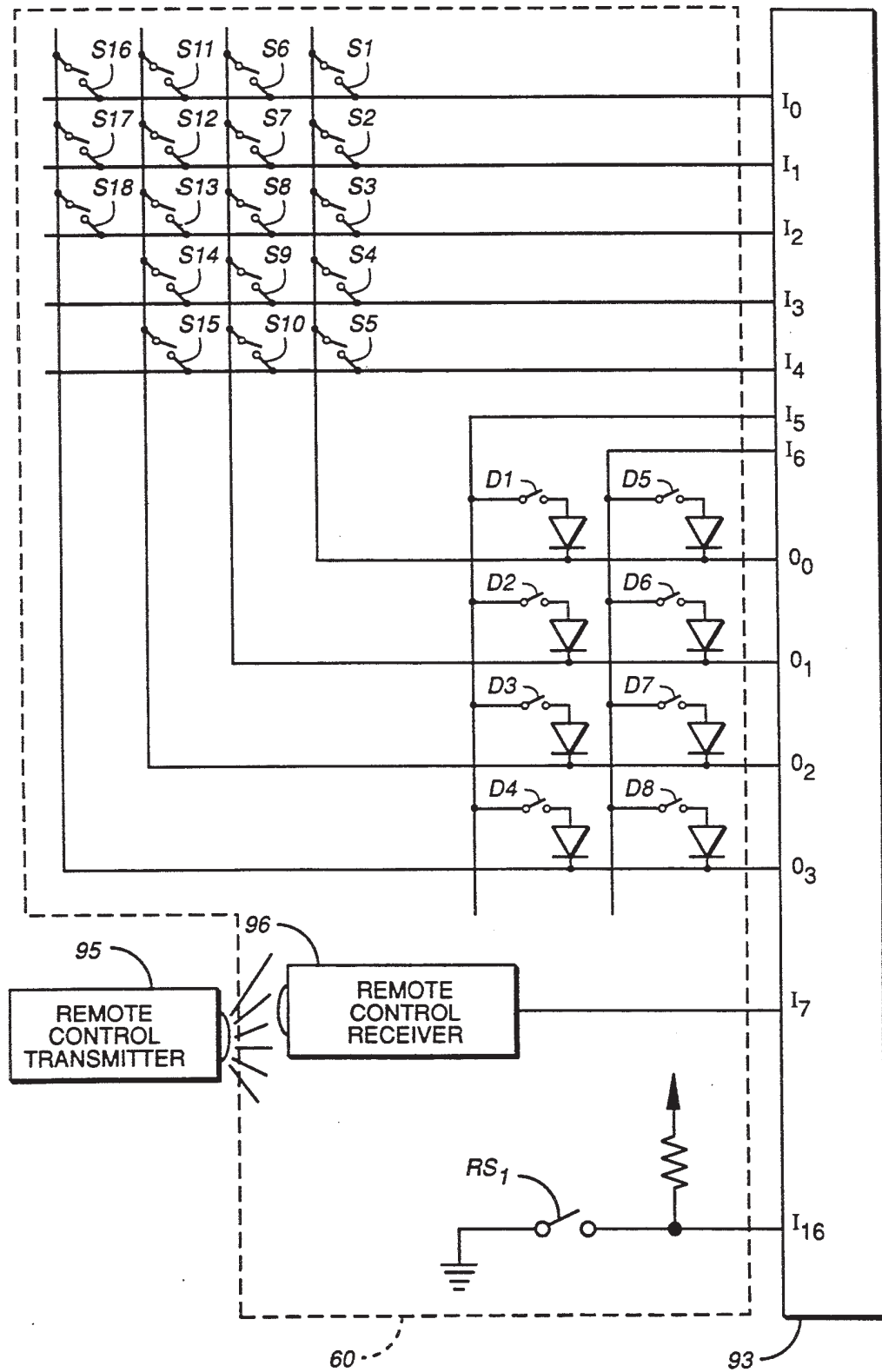


FIG. 4

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