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United States Patent [19]

Wilson et al.

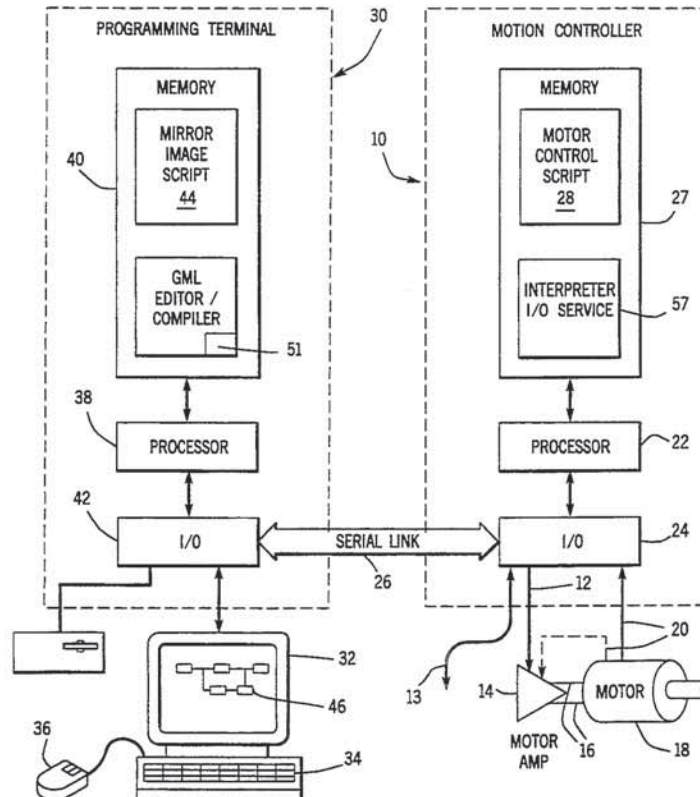
[11] **Patent Number:** 5,392,207[45] **Date of Patent:** Feb. 21, 1995[54] **PROGRAMMABLE MOTION CONTROLLER
WITH GRAPHICAL PROGRAMMING AID**[75] Inventors: Gregory S. Wilson, Merrimack
County, N.H.; David E. Halpert,
Windsor County, Vt.; Mark A.
Chaffee, Grafton County, N.H.[73] Assignee: Allen-Bradley Company, Inc.,
Milwaukee, Wis.

[21] Appl. No.: 109,783

[22] Filed: Aug. 20, 1993

[51] Int. Cl.⁶ G05B 19/18; G05B 11/01[52] U.S. Cl. 364/167.01; 364/146;
364/147; 364/191; 364/192; 395/159;
318/568.1[58] Field of Search 364/140, 146, 147, 167.01,
364/188, 191, 192; 395/159, 161; 318/567,
568.1[56] **References Cited****U.S. PATENT DOCUMENTS**4,315,315 2/1982 Kossiakoff 364/191
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Horn; H. Fredrick Hamann[57] **ABSTRACT**

A programming aid for troubleshooting real-time motion control programs controlling servo motors employs a graphical control language in which functionally related groups of instructions are represented by icons displayed on a programming terminal and interconnected by sequence lines to indicate the order of the instruction's execution. The programming terminal receives the address of the instructions being executed and identifies this address to a displayed icon to modify the icon thus indicating the internal operation of the program on a real time basis with little interruption of the control process.

5 Claims, 5 Drawing Sheets

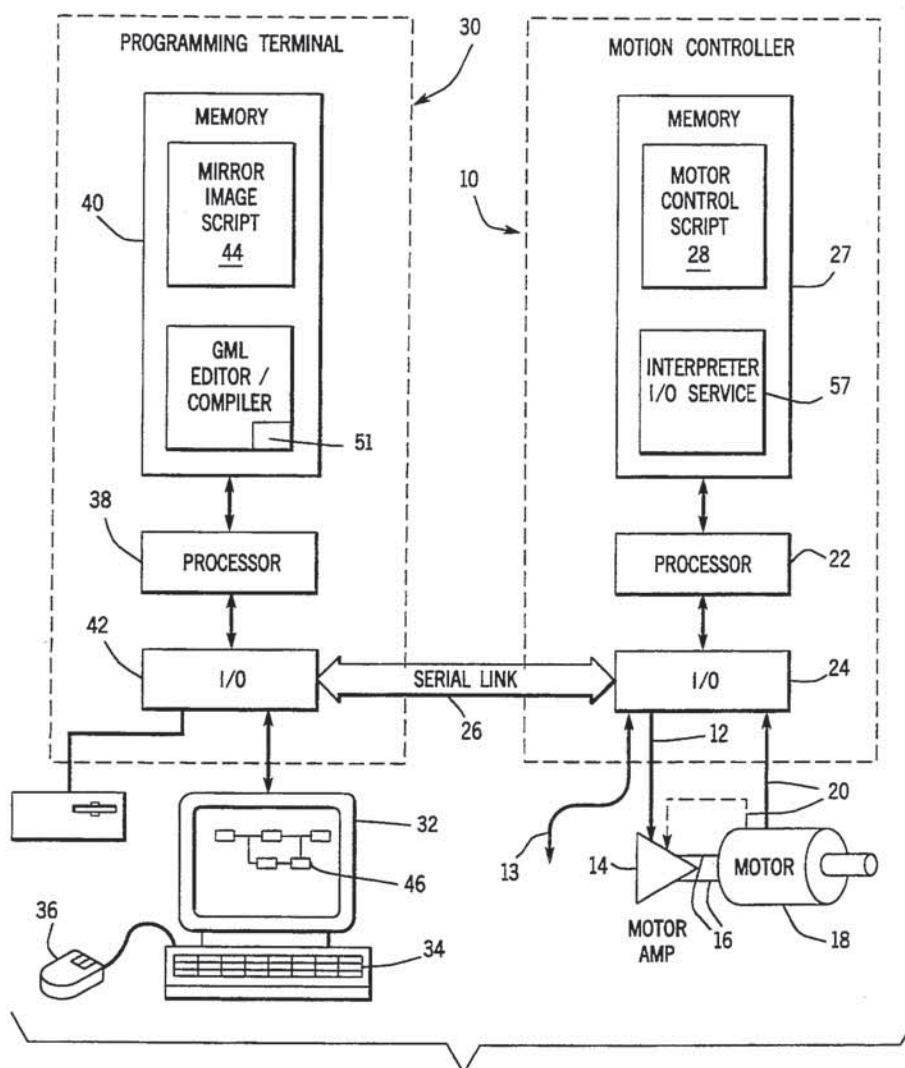


FIG. 1

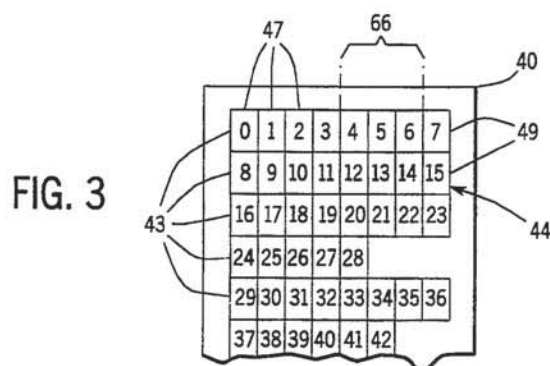


FIG. 3

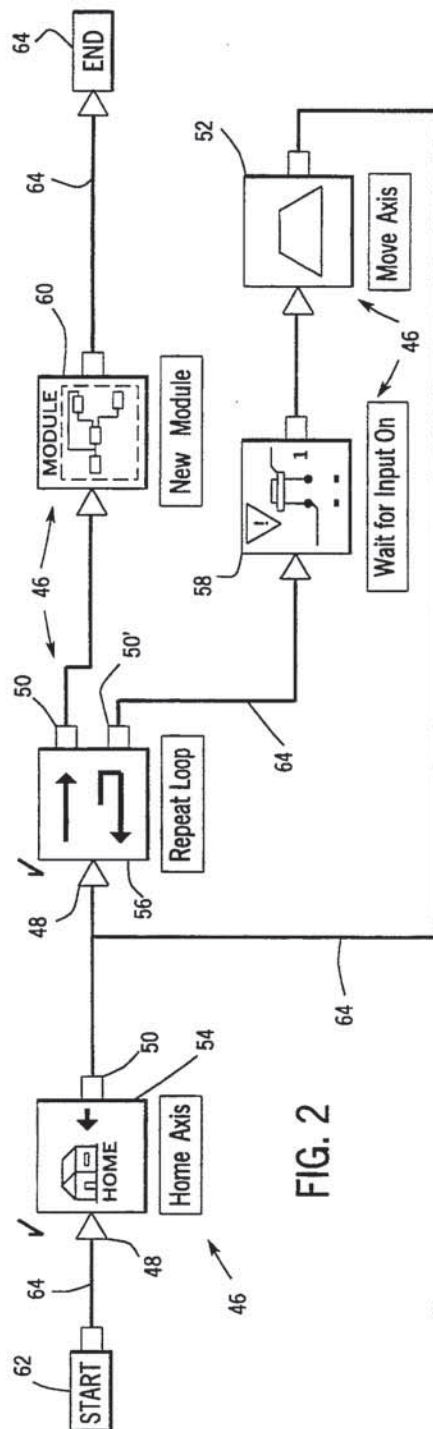


FIG. 2

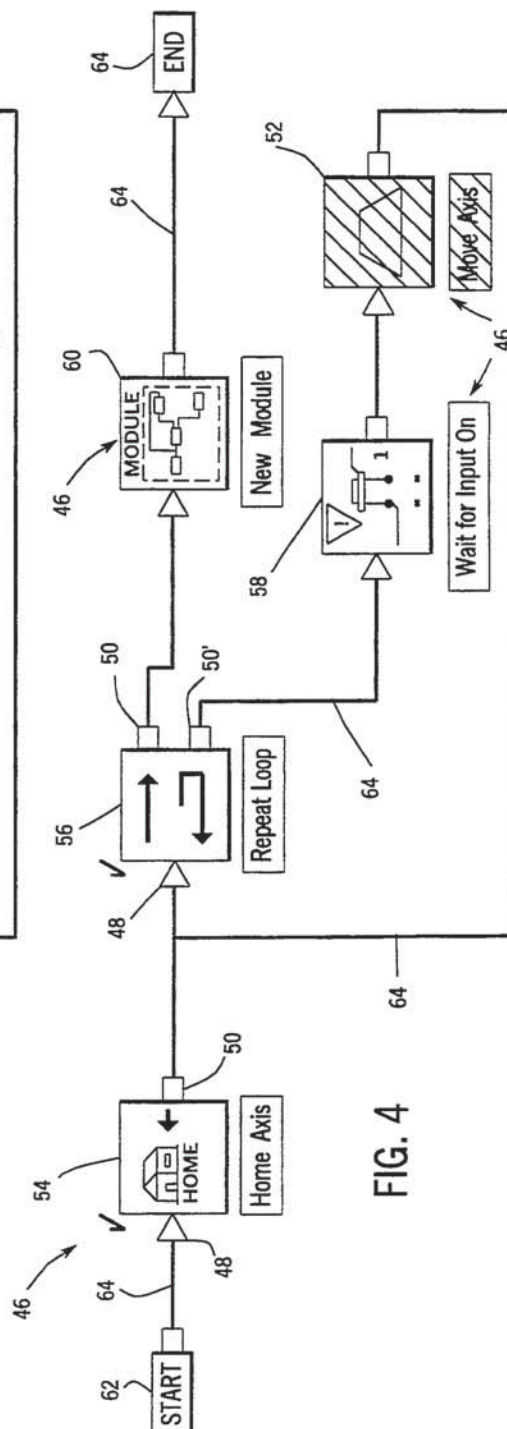


FIG. 4

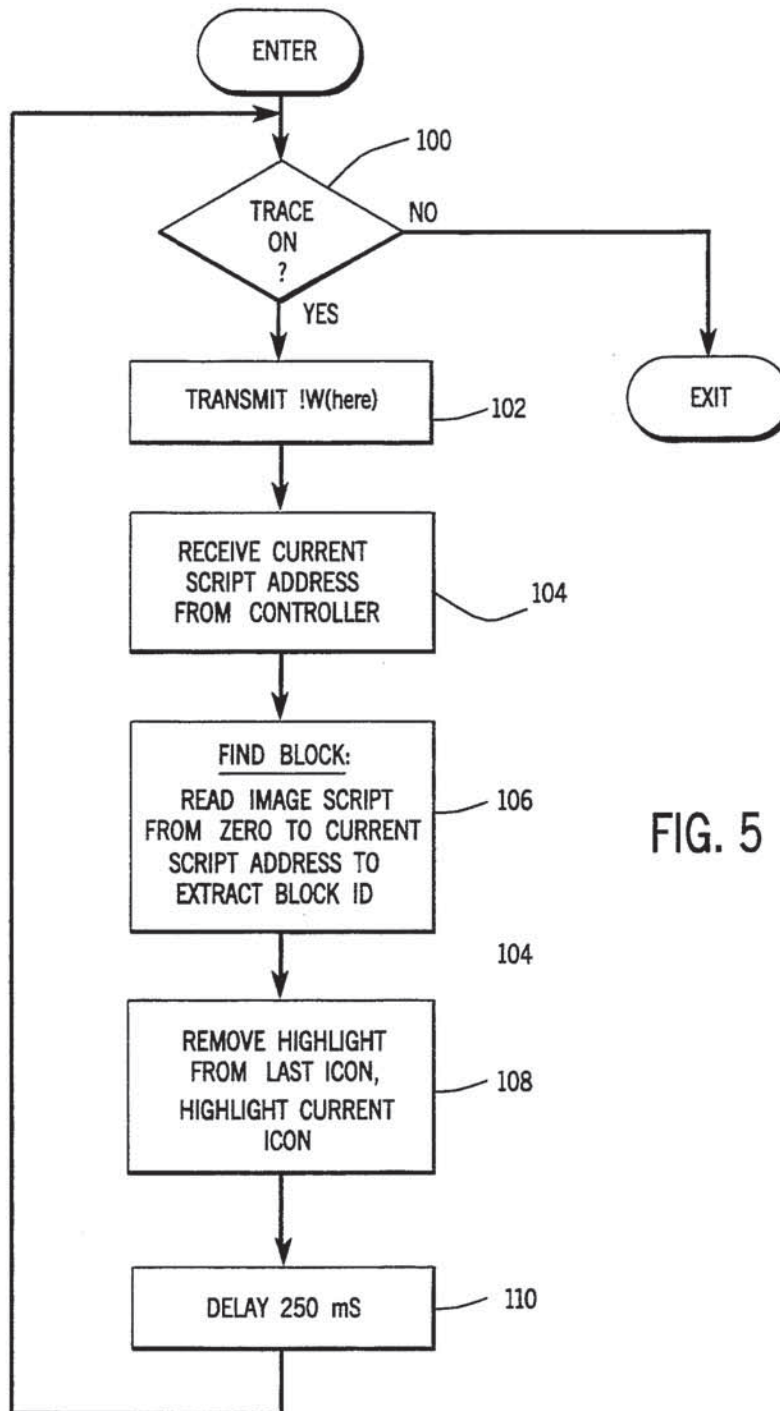


FIG. 5

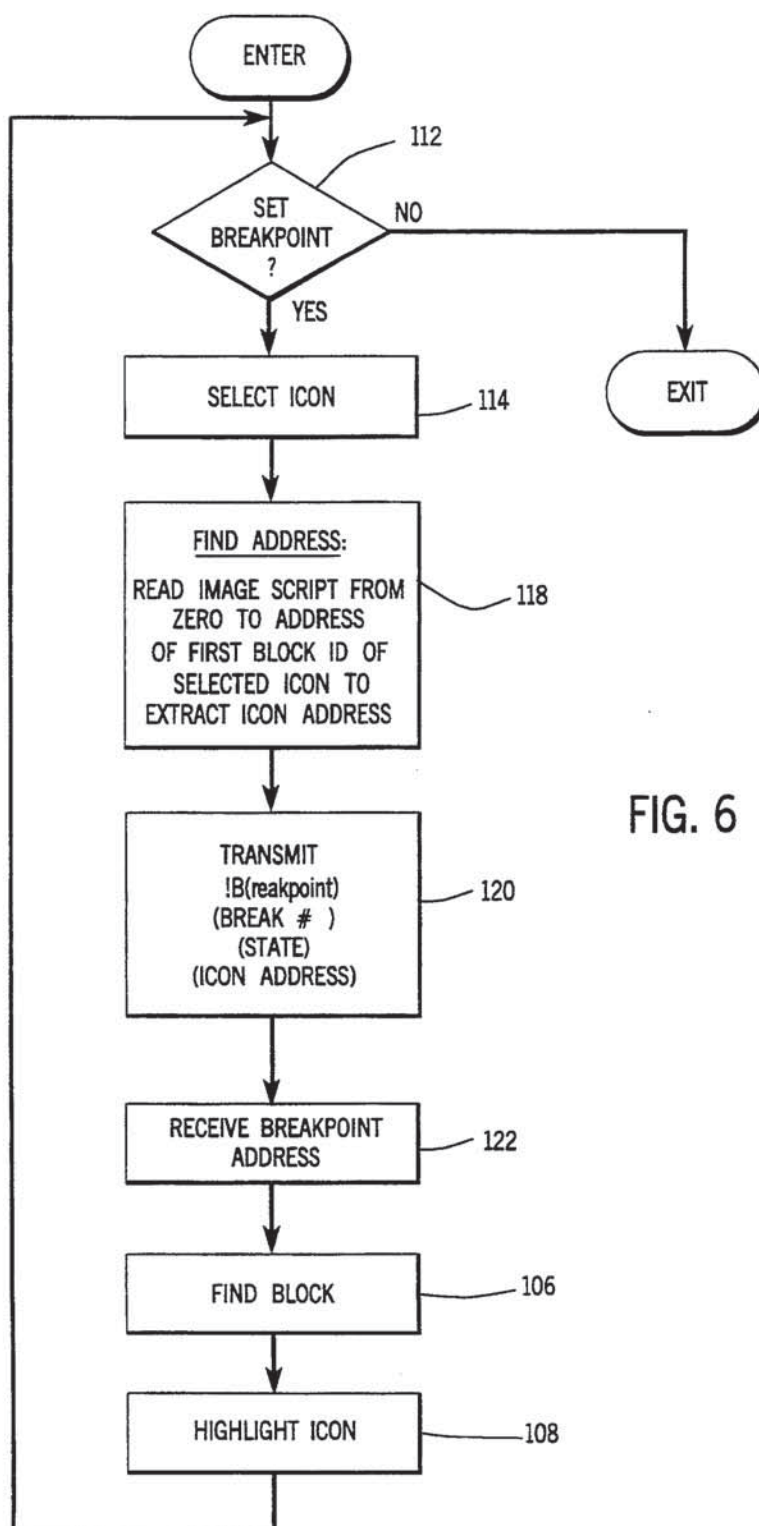


FIG. 6

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