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United States Patent [19]

Warman et al.

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[54] **METHOD AND APPARATUS FOR CONTROLLING NON-COMPUTER SYSTEM DEVICES BY MANIPULATING A GRAPHICAL REPRESENTATION**

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[73] Assignee: **MediaLink Technologies Corporation**, Seattle, Wash.

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 307,864, Sep. 16, 1994, abandoned.

[51] **Int. Cl.**^{6} **G05B 15/02**

[52] **U.S. Cl.** **364/188**; 364/146; 395/348

[58] **Field of Search** 364/140, 141, 364/145, 146, 188, 189, 191; 395/155, 161, 169

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Primary Examiner—Paul P. Gordon

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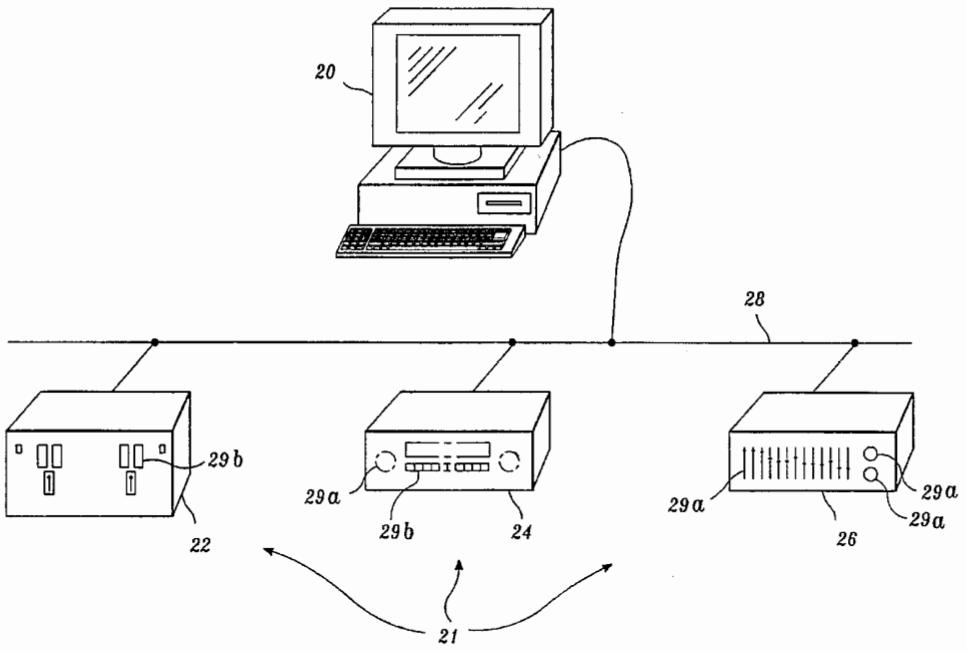
[57] **ABSTRACT**

The graphical control system of the present invention includes a computer (**20**), a device interface (**35**) for a non-computer system device (**21**) having at least one feature control (**29***a*) (or display (**29***b*)), a bus network (**28**) connecting the computer (**20**) to the device interface (**35**), and a visual network operating system (**78**) based on an object-oriented programming paradigm. The device interface (**35**) connects the non-computer system device (**21**) to the bus network (**28**) and provides the mechanism for converting computer-generated commands into signals for controlling the operation of the feature control (**29***a*) of the non-computer system device (**21**). The visual network operating system (78) is a distributed operating system that is partially stored on the computer (**20**) and partially stored in the device interface (**35**). A computer portion causes the computer (**20**) to generate or create a visual device control (**40**) that graphically replicates the feature control (**29***a*) normally associated with the non-computer system device (**21**). The visual device control (**40**) is operated by a conventional graphical control device, such as a mouse (**32**), track ball, touch screen, joystick, etc. As the replicated controls are operated, the computer (**20**) sends messages to the device interfaces (**35**), which cause the feature control (**29***a*) of the non-computer system device (**21**) to respond in the same way it would have responded had the feature control been operated manually, electrically or effected by another computer on the bus network (**28**).

74 Claims, 20 Drawing Sheets



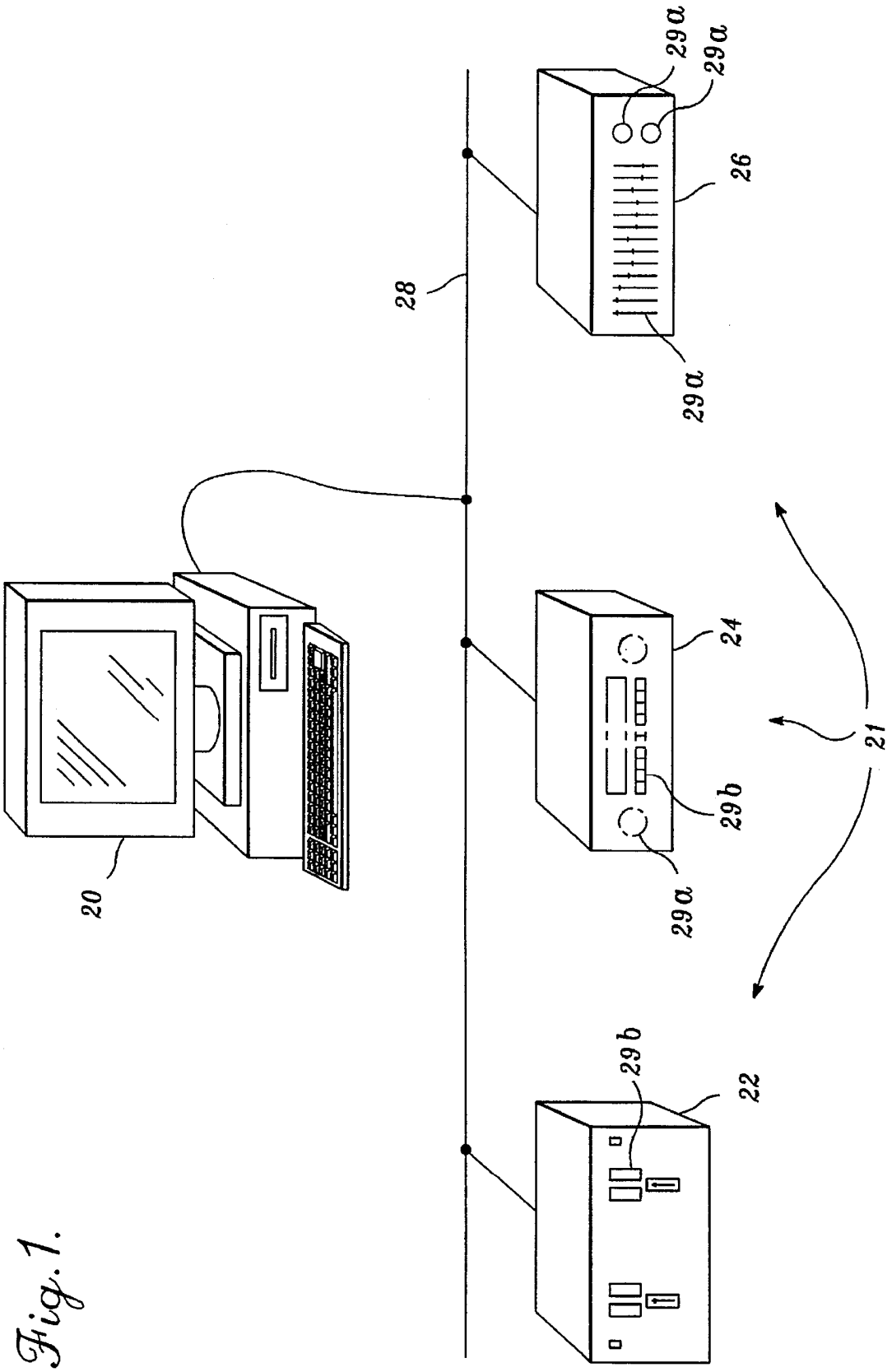
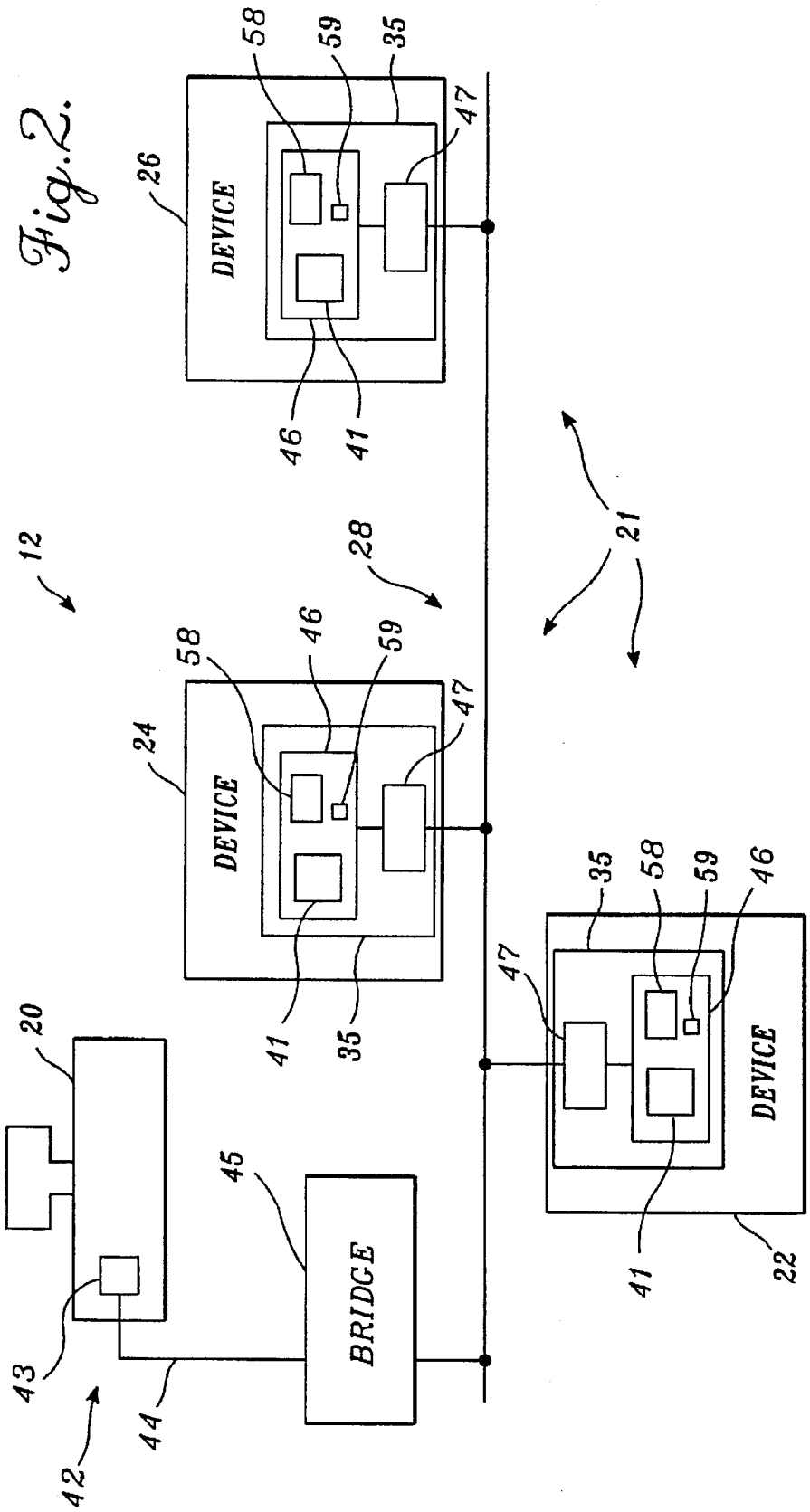


Fig. 1.

Fig. 2.



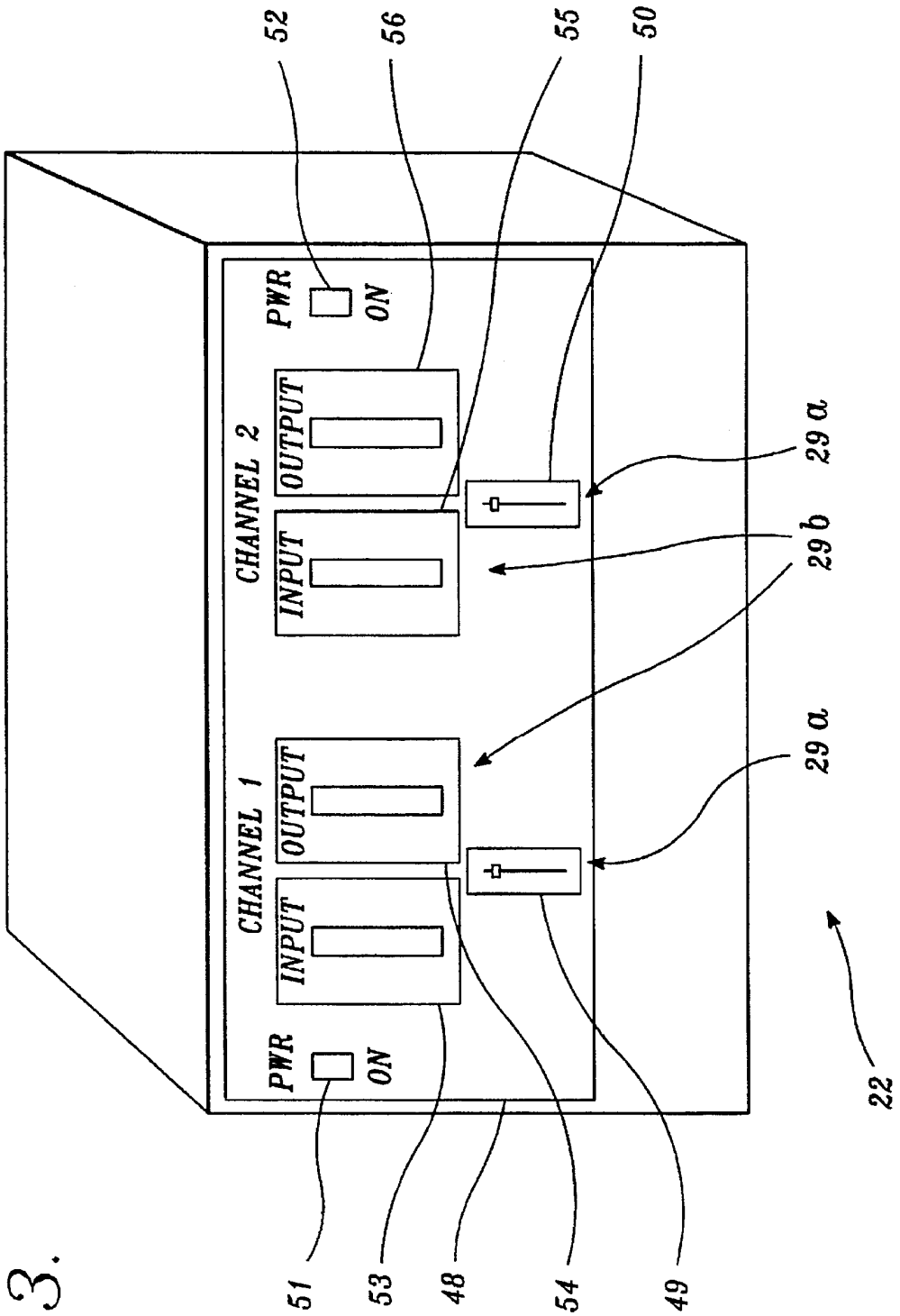


Fig. 3.

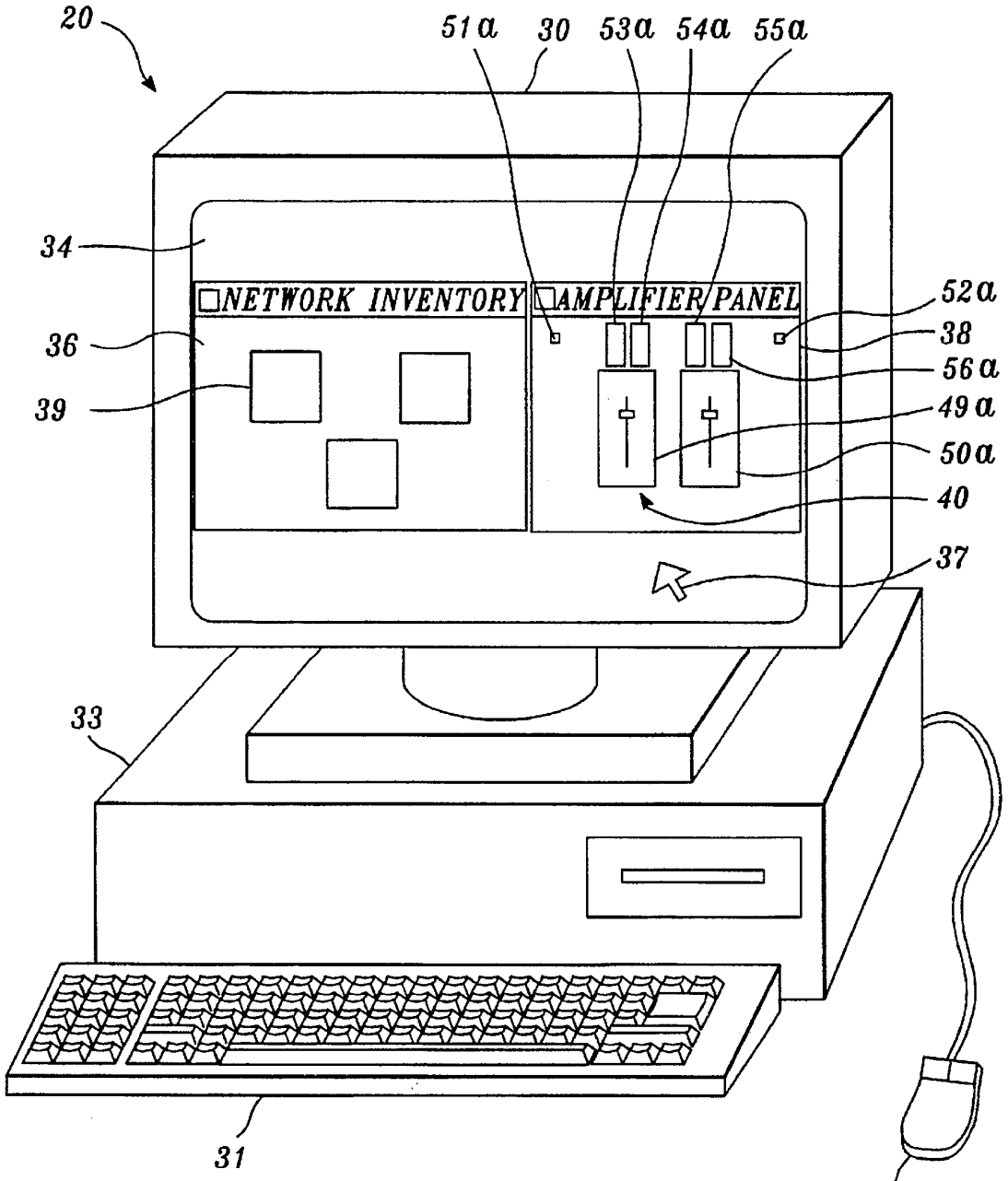


Fig.4.

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