

- [54] **AUTOMATIC IMMUNE SYSTEM FOR COMPUTERS AND COMPUTER NETWORKS**
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- [21] Appl. No.: **4,872**
- [22] Filed: **Jan. 19, 1993**
- [51] Int. Cl.<sup>6</sup> ..... **G06F 11/00**
- [52] U.S. Cl. .... **395/181; 395/700; 395/183.09; 395/183.14**
- [58] Field of Search ..... **395/575; 371/16.5, 19, 371/11.2, 8.2**

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[57] **ABSTRACT**

A method includes the following component steps, or some functional subset of these steps: (A) periodic monitoring of a data processing system (10) for anomalous behavior that may indicate the presence of an undesirable software entity such as a computer virus, worm, or Trojan Horse; (B) automatic scanning for occurrences of known types of undesirable software entities and taking remedial action if they are discovered; (C) deploying decoy programs to capture samples of unknown types of computer viruses; (D) identifying machine code portions of the captured samples which are unlikely to vary from one instance of the virus to another; (E) extracting an identifying signature from the executable code portion and adding the signature to a signature database; (F) informing neighboring data processing systems on a network of an occurrence of the undesirable software entity; and (G) generating a distress signal, if appropriate, so as to call upon an expert to resolve difficult cases. A feature of this invention is the automatic execution of the foregoing steps in response to a detection of an undesired software entity, such as a virus or a worm, within a data processing system. The automatic extraction of the identifying signature, the addition of the signature to a signature data base, and the immediate use of the signature by a scanner provides protection from subsequent infections of the system, and also a network of systems, by the same or an altered form of the undesirable software entity.

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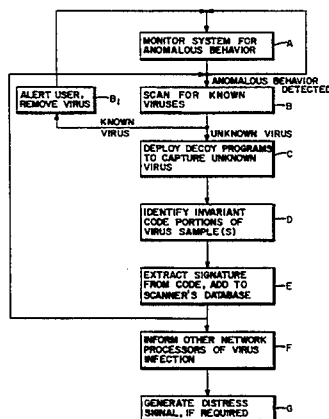
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**46 Claims, 7 Drawing Sheets**



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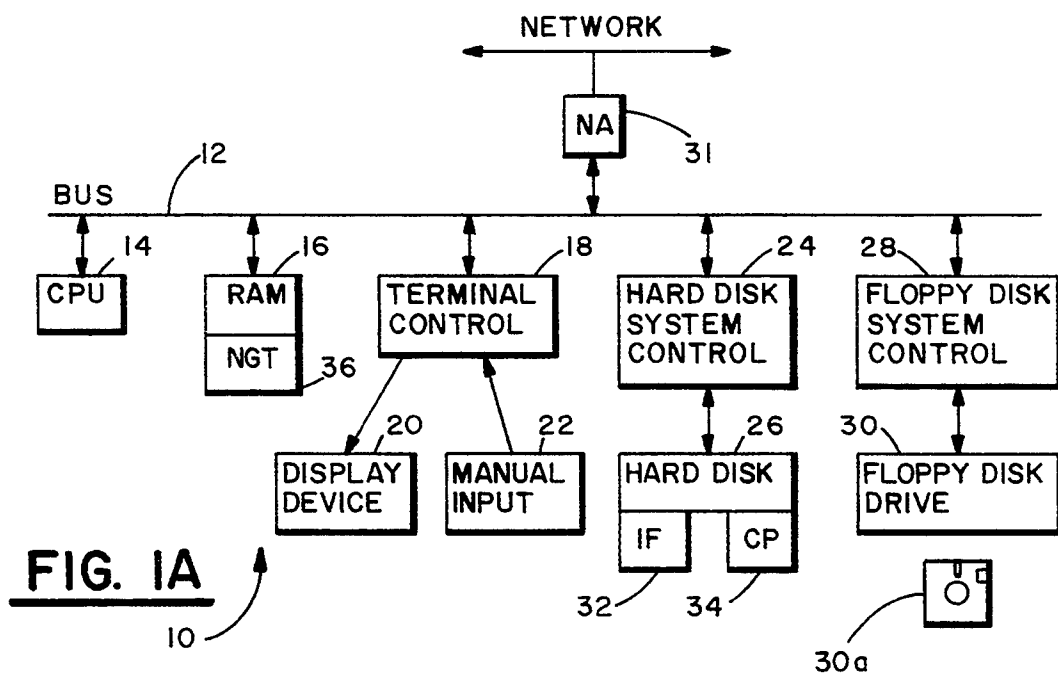
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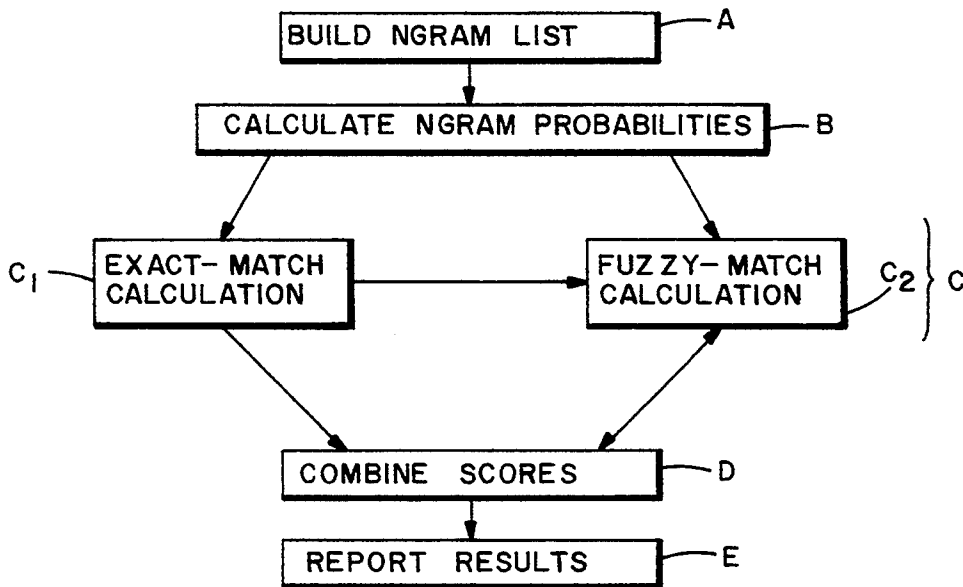
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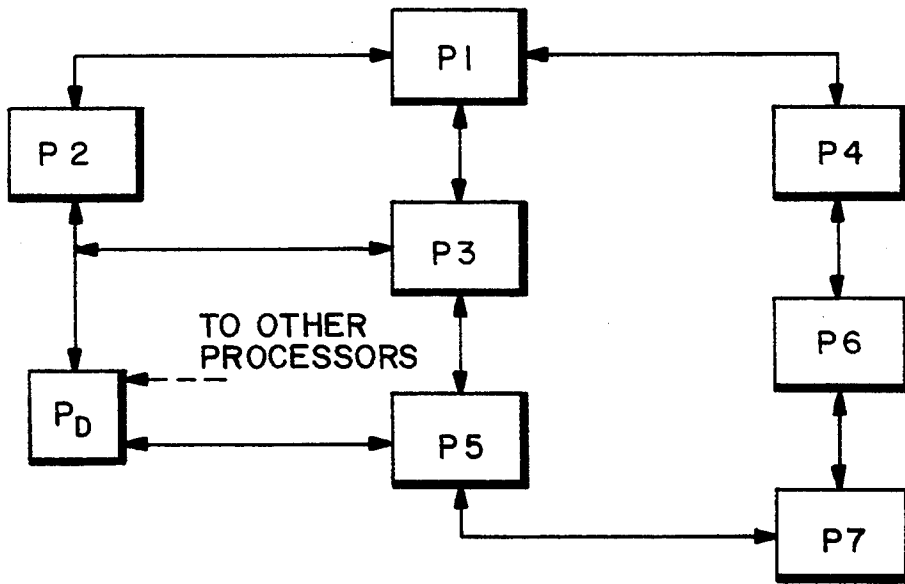
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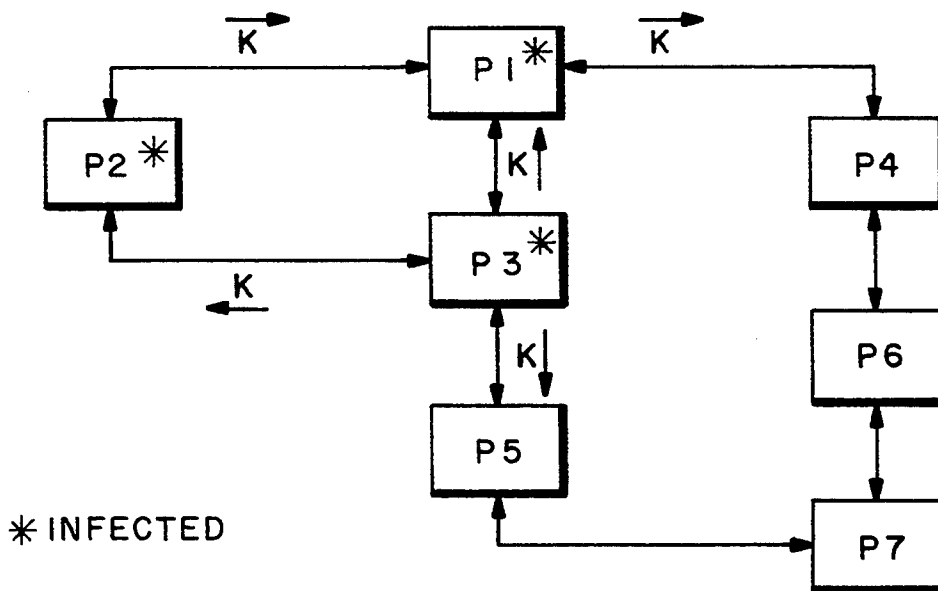
**FIG. 1A**



**FIG. 5**

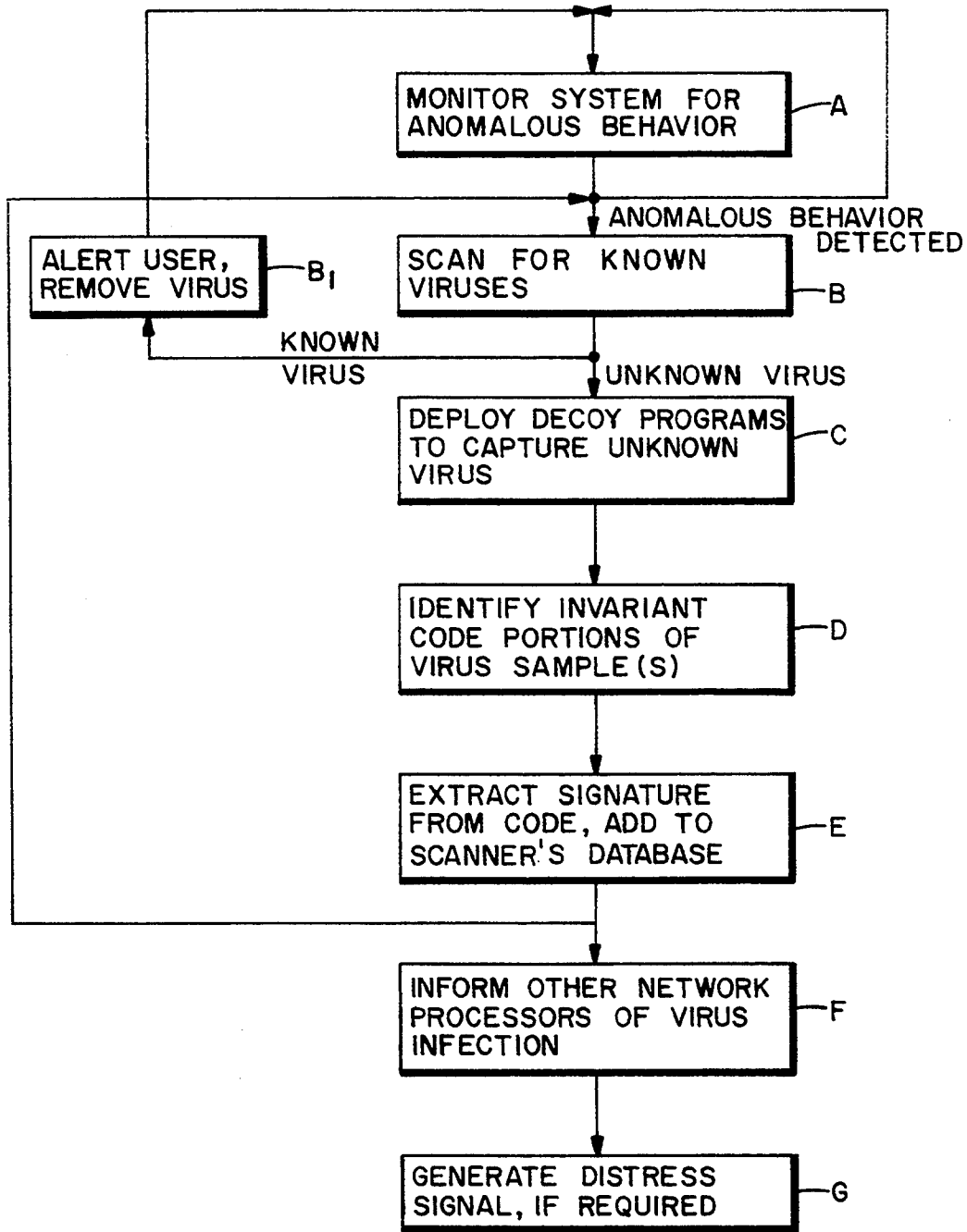


**FIG. 1B**



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**FIG. 1C**



**FIG. 2**

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