

[54] PROGRAMMING-ON-DEMAND CABLE SYSTEM AND METHOD

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[21] Appl. No.: 497,885

[22] Filed: May 25, 1983

[51] Int. Cl.³ H04N 7/16

[52] U.S. Cl. 455/612; 455/3; 455/6; 455/53; 358/86; 370/3

[58] Field of Search 455/4, 5, 6, 53, 612; 358/86, 102, 114

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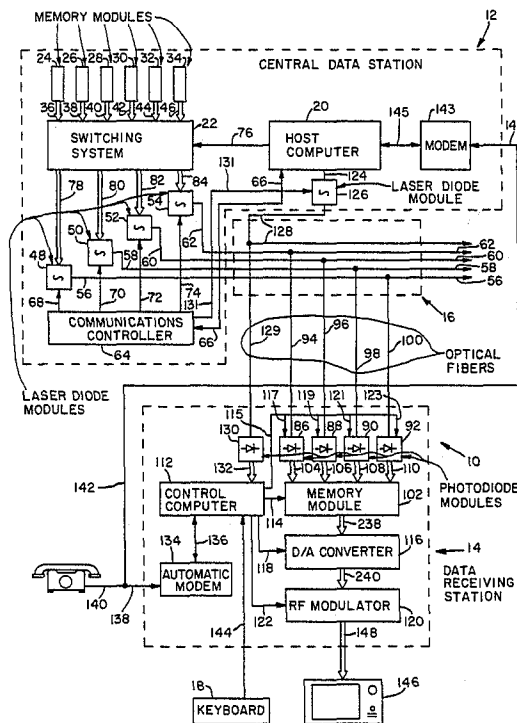
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Assistant Examiner—Timothy K. Greer
Attorney, Agent, or Firm—Albert L. Jeffers; Anthony Niewyk

[57] ABSTRACT

A programming-on-demand cable system is provided which allows any one of a plurality of individual users to request anyone of a plurality of video programs they wish to view from a library of programs, and permits the requested program to be available for viewing on a conventional television set at the user's location following a request initiated by the user. Each program is preprogrammed in a memory device selectable by a host computer at a central data station in response to an address signal transmitted from the user. The host computer in conjunction with other electronics transmits the video program at a high non-real-time rate over a fiber optic line network to a data receiving station at the user's location. The data receiving station then converts the received optical data back to electrical data and stores it for subsequent real-time transmission to the user's television set. The system permits the user to view any one of a number of programs transmitted on a non-real-time basis, and also allows the user to store the transmitted program at his data receiving station for an indefinite period of time for viewing at a later date. A method is also provided for transmitting the programs on a non-real-time basis.

14 Claims, 4 Drawing Figures



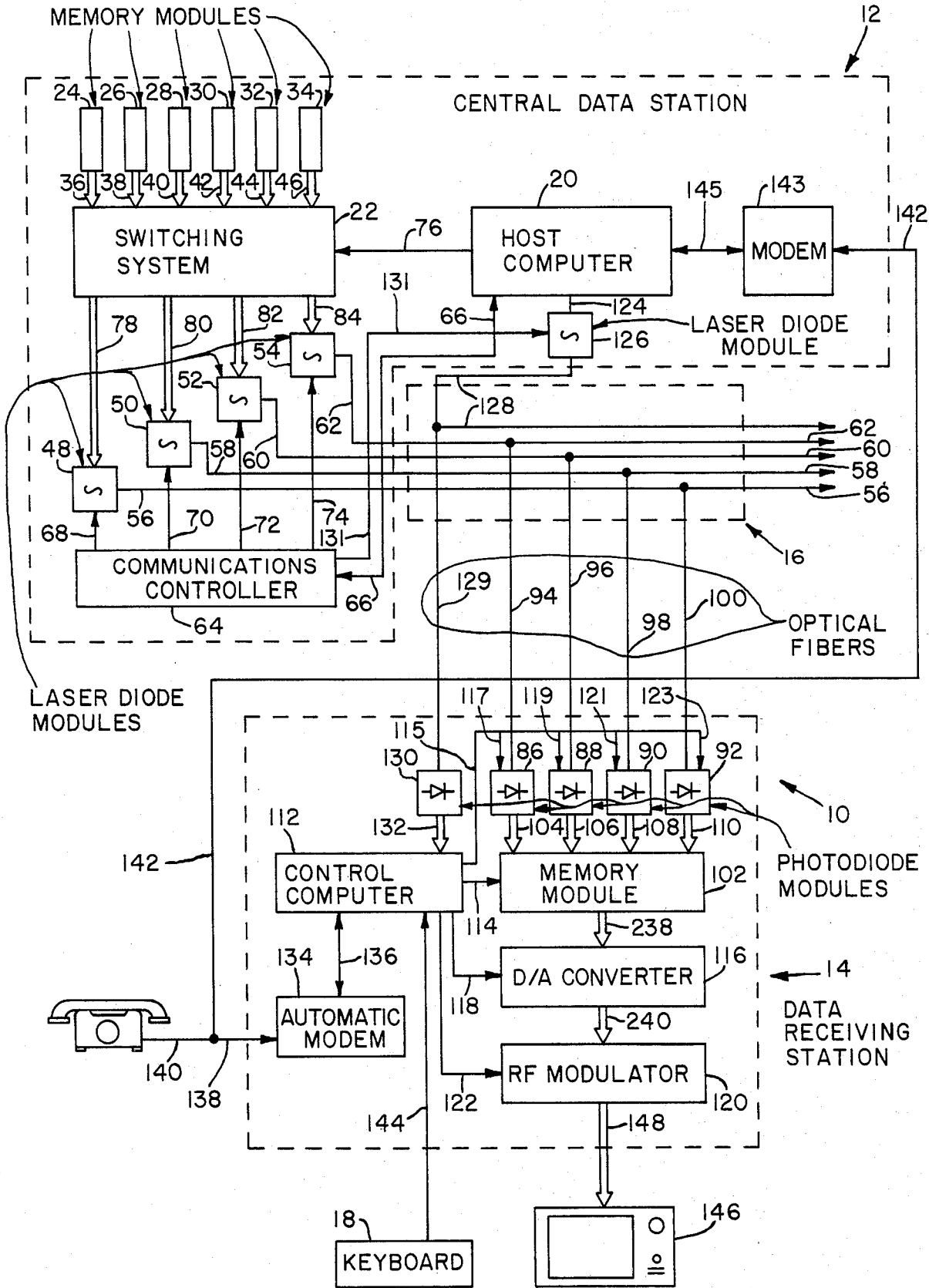


FIG. 1

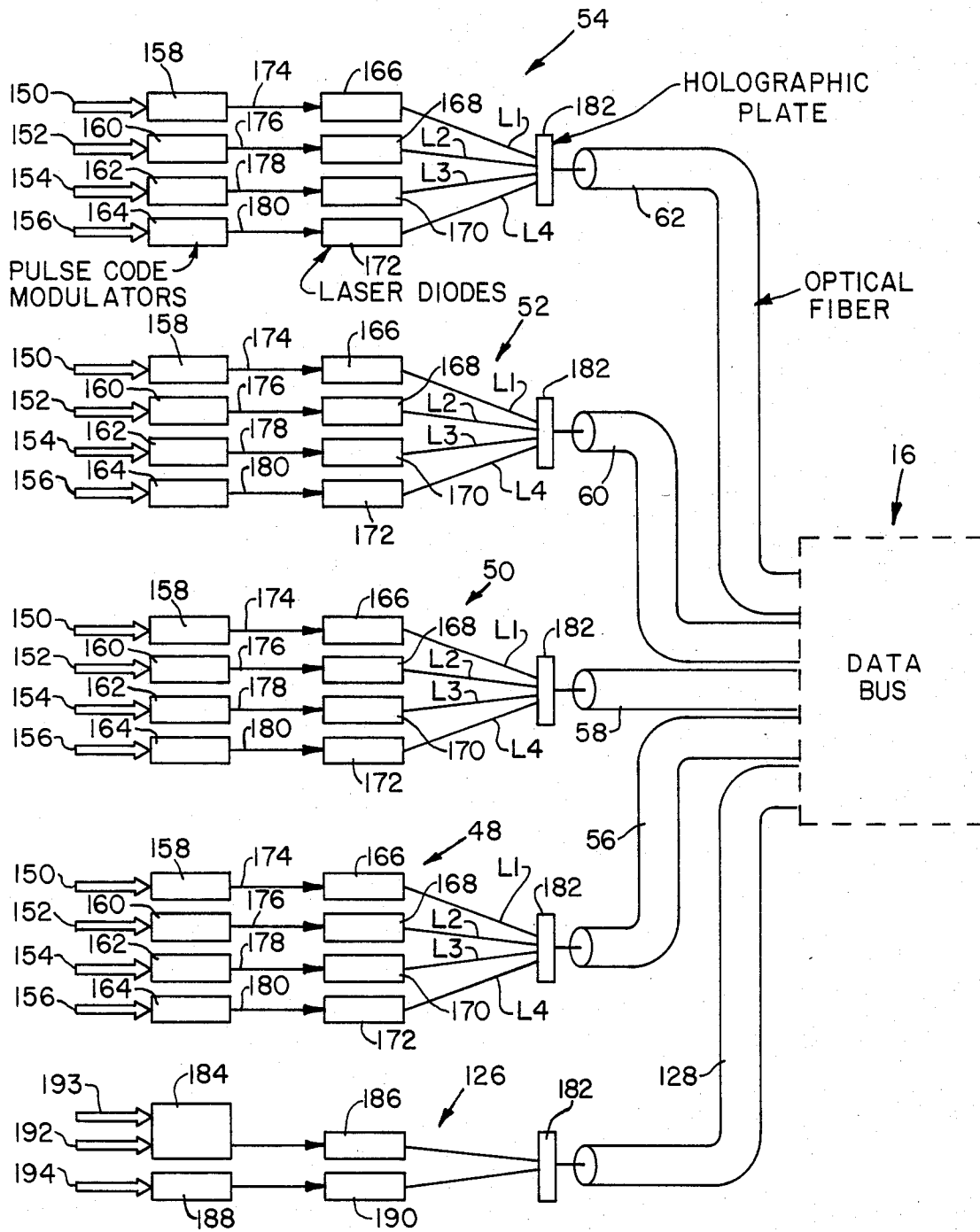


FIG. 2

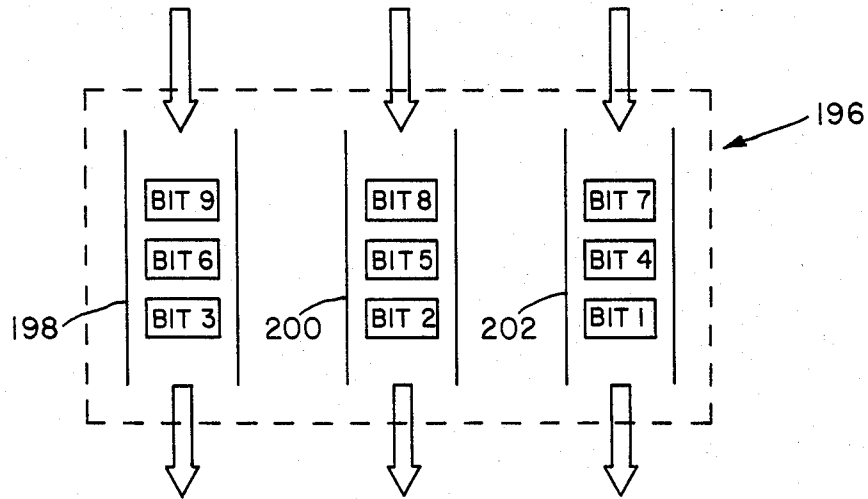


FIG. 3

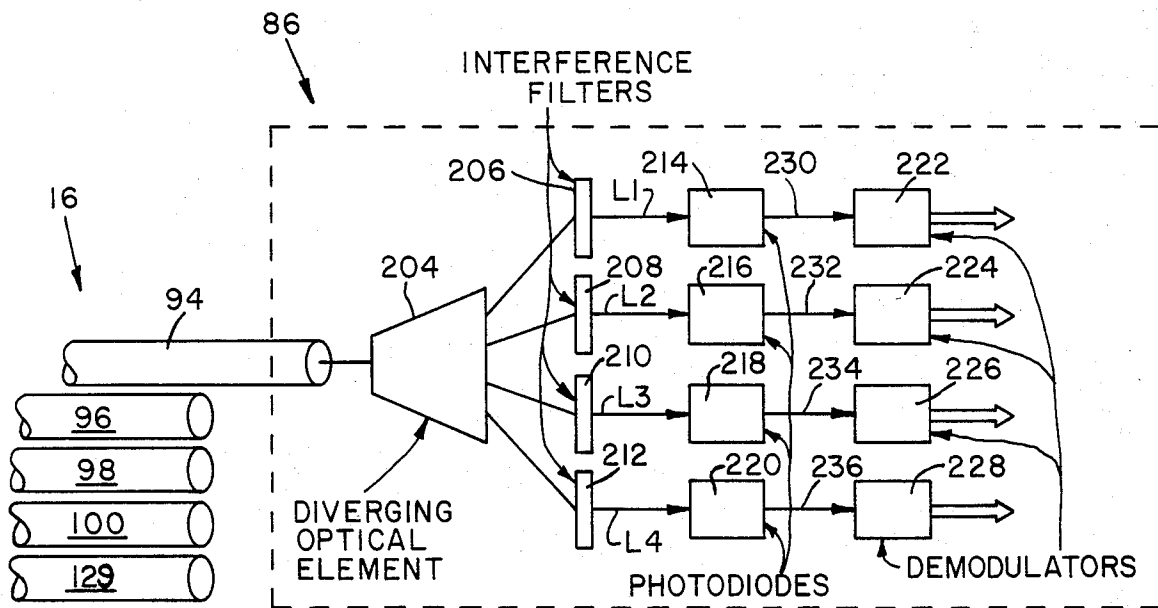


FIG. 4

PROGRAMMING-ON-DEMAND CABLE SYSTEM AND METHOD

BACKGROUND OF THE INVENTION

This invention pertains to a broadcasting cable system, and more particularly to a programming-on-demand cable system wherein any one of a plurality of stored video programs can be broadcast in a non-real-time basis to a user.

Generally and to the best of applicant's knowledge, existing video broadcast services provide a user any one of a plurality of programs to be viewed on a real-time basis. The user may select any one of the video programs, however, he is restricted in his enjoyment of the program in that the user has no control over when in time the program is broadcast to his video or television set. For example, video programs are routinely announced in video or television guides listing the programs available to the user for his choice in viewing at a specific time of day. Consequently, the user does not have the choice of viewing the program when he so desires, but rather is restricted to that particular time listed in the video or television guide.

Moreover, it would be much too impractical and costly to provide the necessary equipment to process numerous concurrent requests for real-time transmission of video programs at any time desired by the users.

Present broadcasting systems transmit the data by one of many methods, for example, "over-the-air", electrical lines or cables, fiber optic lines or cables, and the like. Presently, transmission by means of fiber optics is becoming more practical, however, the user is still restricted to viewing his program at a broadcasting time not of his choosing.

SUMMARY OF THE INVENTION

The present invention overcomes the problems and disadvantages of present broadcasting systems by providing an improved programming-on-demand cable system.

The programming-on-demand cable system of the present invention overcomes the inability of a user to select any one of a number of video programs for viewing at a time of his choice by providing a non-real-time transmission of the desired program. Any number of various programs are stored in memory devices at a central location or library and are viewable by a user at any time by means of the cable system of the present invention. A host computer at the library is electrically connected to the memory devices, and upon receiving an address signal from a keyboard located at the user's location, the host computer selects the memory device identified by the address signal, and causes the program stored therein to be transmitted by a fiber optic line to a data receiving station at the user's location. A central data station, of which the host computer is a part, causes the program identified by the address signal to be converted from electrical data to optical data and transmitted over the fiber optic line to the data receiving station, which then reconverts the optical data back to the original electrical data. Thereafter, the reconverted electrical data is transmitted to the user's television set for virtually immediate viewing; or the reconverted electrical data is stored in a memory module in the data receiving station for subsequent viewing by the user at the time of his choice. If necessary, the electrical data received by the data receiving station is reconstructed,

which may be necessary if the electrical data is received in a form not acceptable by the television for viewing, and is transmitted at a normal rate to the user's television.

Further, the data transmitted from the central data station to the data receiving station is transmitted in multiplexed fashion so that the equipment at the central data station is dedicated for only a short period of time, for example, on the order of 20 to 30 seconds, thereby minimizing any delay between transmission of an address signal by the user and the receipt of the desired program at the user's location.

To facilitate the storage and manipulation of the video programs, and to allow the method to be placed under automatic computer control, the electrical data representing each video program is converted to compressed digital form and stored in suitable high density memory devices.

In one form of the invention, there is provided an improvement in a broadcasting system including a central data station having means for converting electrical data to optical data, a data receiving station having means for reconverting the optical data back to the electrical data, a fiber optic line means connecting the central data station and data receiving station for transmitting the optical data therethrough, and a broadcasting device electrically connected to the receiving station for receiving and broadcasting the reconverted electrical data to the user. The improvement comprises a plurality of memory devices electrically connected to the central data station, wherein each memory device is identifiable by a respective address signal and has preprogrammed therein respective electrical data representing a video program. Each memory device is responsive to its received address signal to thereby transmit its electrical data to the converting means. A user-operable generator device at the user's location is operatively connected to the central data station for selectively generating any one of the address signals and transmitting a selected address signal to the central data station, whereby the central data station transmits that address signal to the identified memory device which then transmits its electrical data to the converting means for subsequent transmission to and broadcasting by the broadcasting device at the user's location.

The present invention also provides a method for broadcasting on a non-real-time basis any one of a plurality of electrical data representing different video programs comprising the steps of providing a central data station including an electro-optical transducer for converting electrical data to optical data, a data receiving station including an opticoelectrical transducer for reconverting the optical data back to the electrical data, a fiber optic line means connecting the transducers, and a broadcasting device electrically connected to the data receiving station for receiving and broadcasting the electrical data transmitted. The method further comprises the steps of providing a plurality of memory devices electrically connected to the central data station, wherein each of the memory devices is identifiable by a respective address signal, and preprogramming each memory device with respective electrical data representing a video or broadcast program, each memory device being responsive to its received address signal to thereby transmit its electrical data to the electro-optical transducer. Further provided is a user-operable generator device at the location of the broadcasting

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