United States Patent [19]

Braun et al.

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[54] **OPTICAL TRANSPORT SYSTEM**

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[51] Int. Cl.⁶ **G02B 6/28**; H04B 10/20

[52] **U.S. Cl.** **385/24**; 359/119; 359/127; 359/134

[58] **Field of Search** 385/24, 27, 31, 385/45, 47, 37, 17; 372/6; 359/115, 119, 127, 134, 143, 125, 137

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[57] **ABSTRACT**

A bi-directional, redundant, optical transport system is configured to provide a non-blocking, bi-directional, multi-channel, protocol independent optical transport system for the simultaneous transfer of digital, analog, and discrete data between a plurality data terminal equipment. The optical transport system includes a light transmission line for transmitting light bi-directionally and a plurality of nodes, connected in series by the light transmission line for receiving, extracting and passing signal light. Each node comprises: data terminal equipment for issuing and receiving electrical signals; an electro-optical interface device, associated the data terminal equipment, for converting electrical signals issued by the associated data terminal to signal light for insertion onto the light transmission light and for converting signal light, extracted from the light transmission line into electrical signals to be received by the associated data terminal; a translation logic device connected between the optical interface device and the data terminal equipment, for performing required protocol translation for the data terminal equipment and an optical interface device, connected to the electro-optical interface device and the light transmission line, for extracting signal light from the light transmission line to be converted into electrical signals by the electro-optical interface device for receipt by the data terminal equipment, for inserting, onto the light transmission line, signal light received from the electro-optical interface device and for passing signal light bi-directionally on the light transmission line.

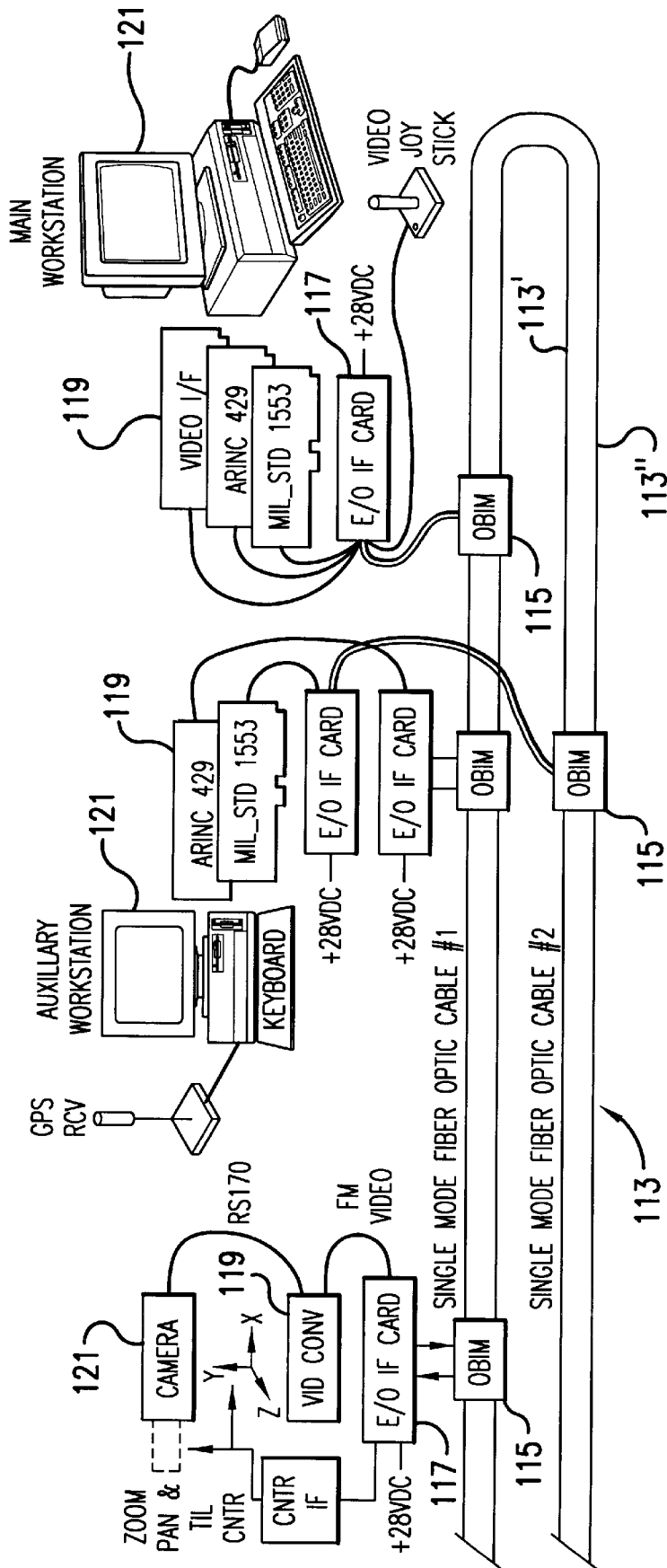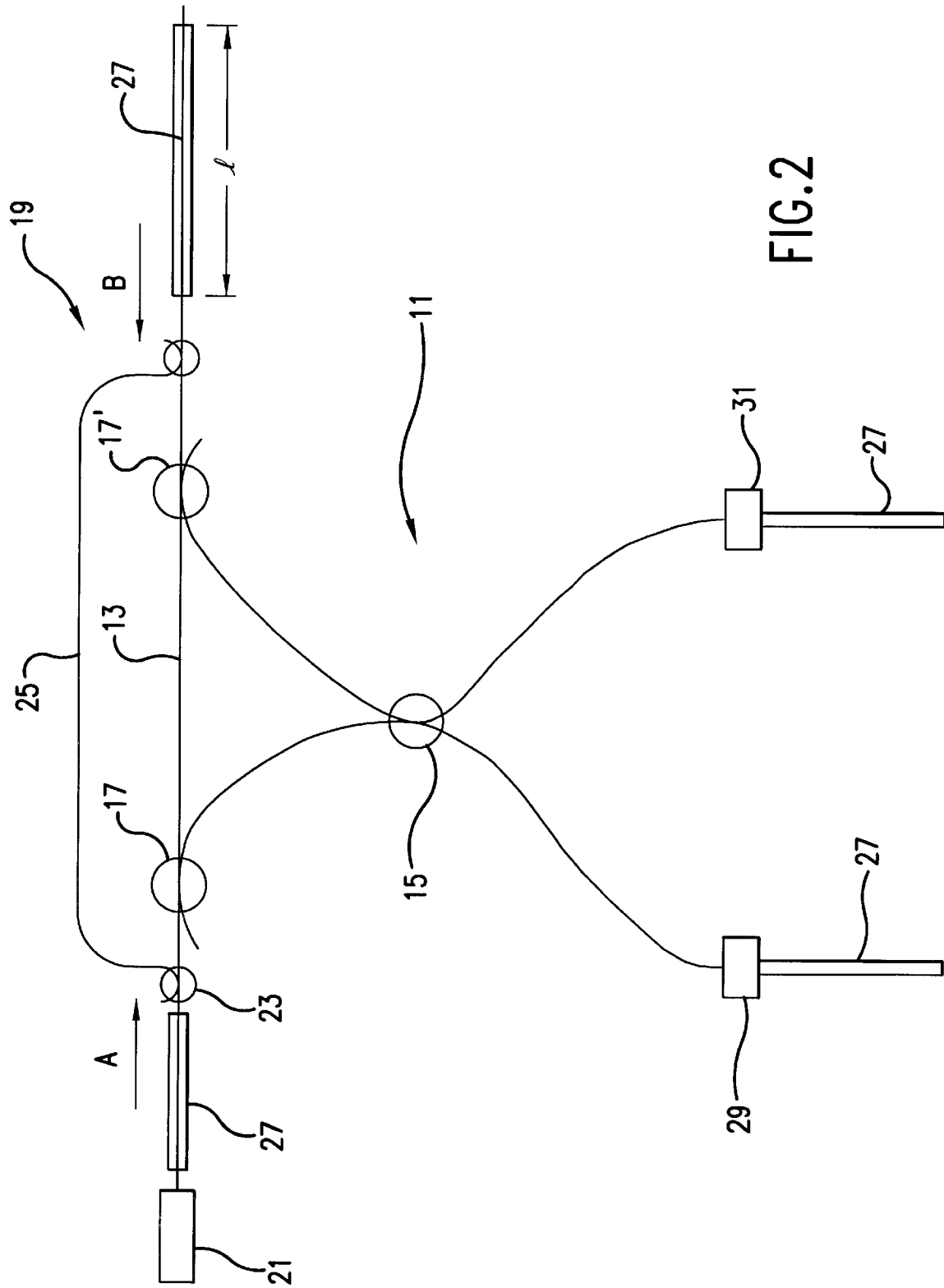**18 Claims, 16 Drawing Sheets**
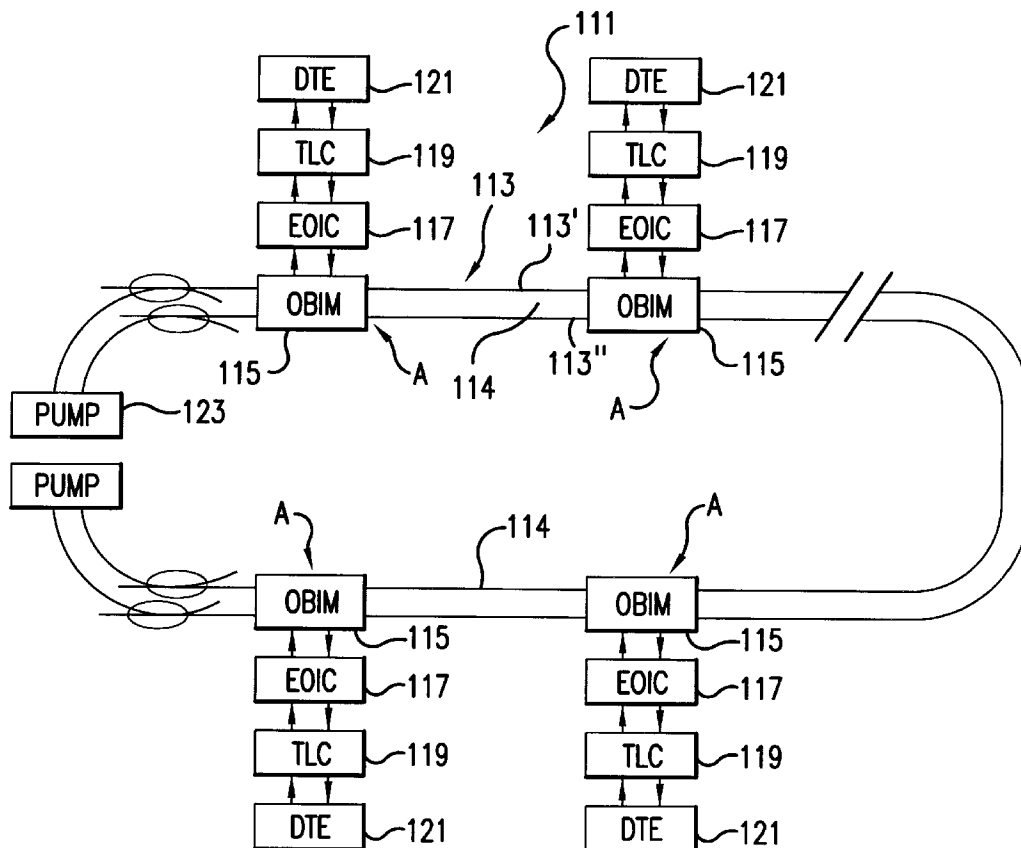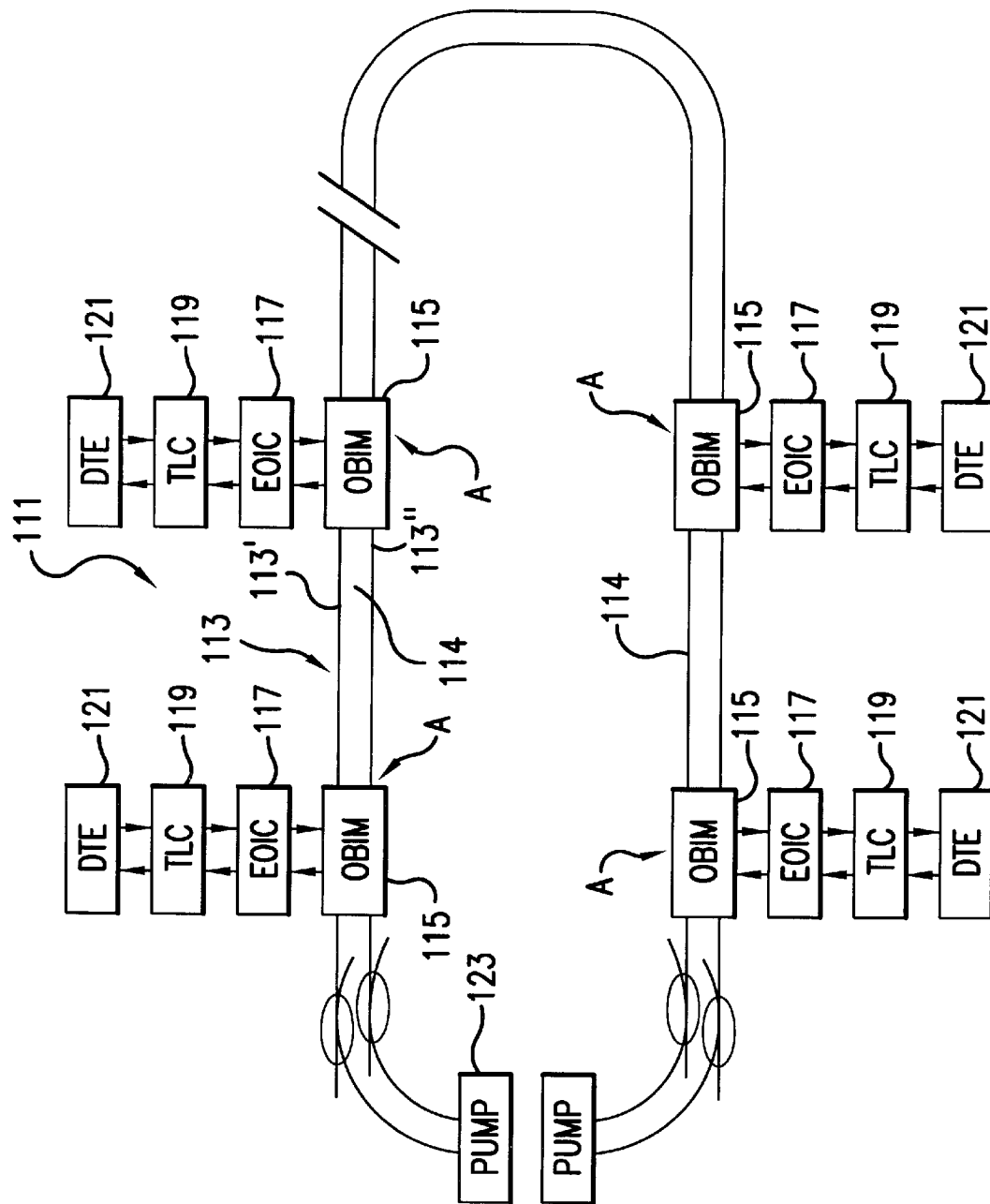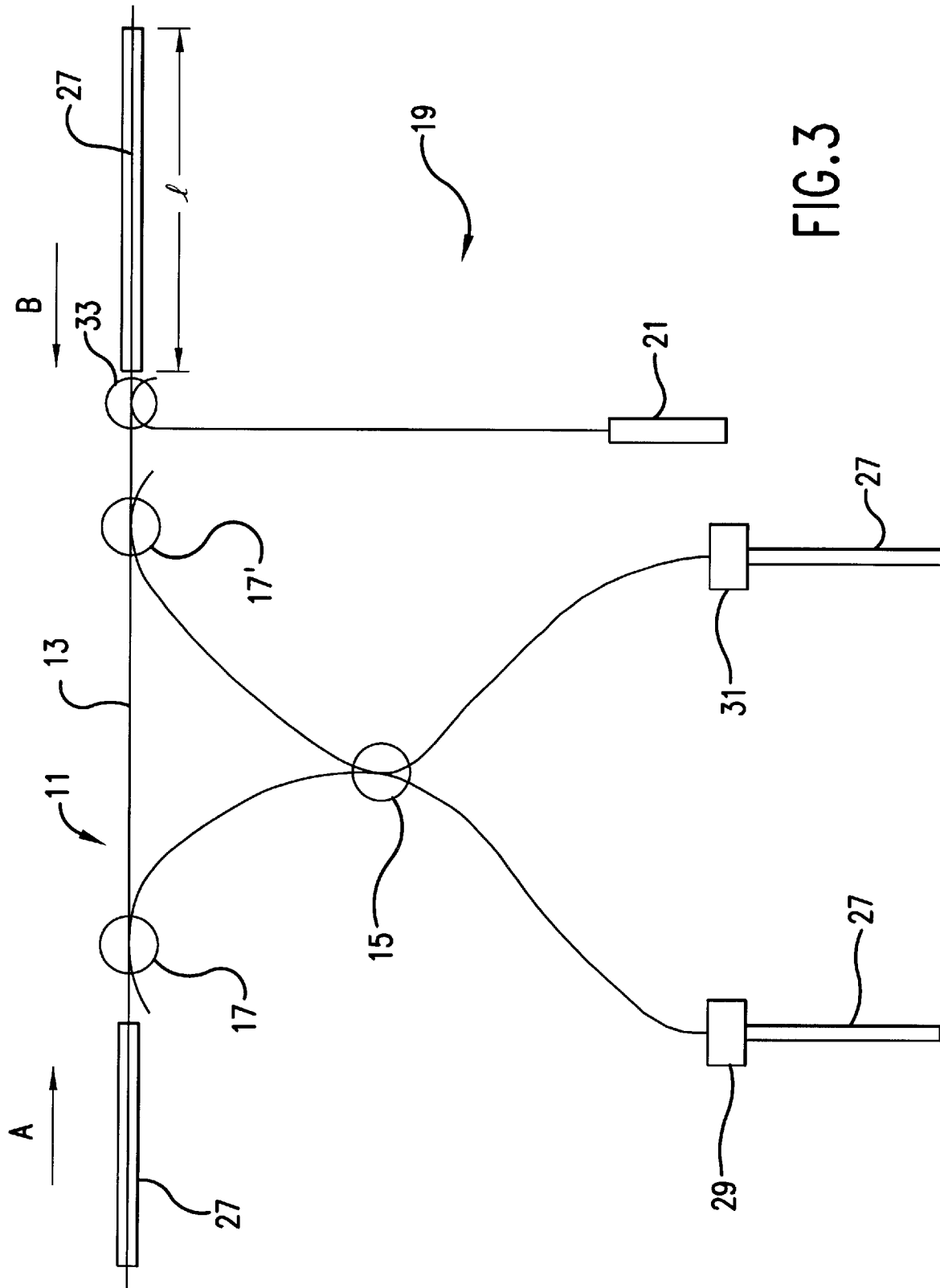
FIG. 1A

FIG. 1B

FIG.2

FIG.3

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