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[54] **REAL-TIME WIDEBAND HOLOGRAPHIC SURVEILLANCE SYSTEM**

[76] Inventors: **David M. Sheen**, 1917 Hood; **H. Dale Collins**, 1751 Duluth, both of Richland, Wash. 99352; **Thomas E. Hall**, 8301 W. Entiat Pl., Kennewick, Wash. 99336; **Douglas L. McMakin**, 2173 Shasta Ave., Richland, Wash. 99352; **R. Parks Gribble**, 1215 Cottonwood Dr., Richland; **Ronald H. Severtsen**, 1803 Birch Ave., Richland, Wash. 99352; **James M. Prince**, 3029 W. 2nd Ave., Apt. F95, Kennewick, Wash. 99336; **Larry D. Reid**, Rt. 1, Box 1291B, Benton City, Wash. 99320

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 212,432, Mar. 14, 1994, Pat. No. 5,455,590, which is a continuation-in-part of Ser. No. 963,204, Nov. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,750, Aug. 30, 1991, abandoned.

[51] **Int. Cl.**[6] **G01S 13/89**; G03H 5/00

[52] **U.S. Cl.** **342/179**; 367/8

[58] **Field of Search** 342/179; 367/8

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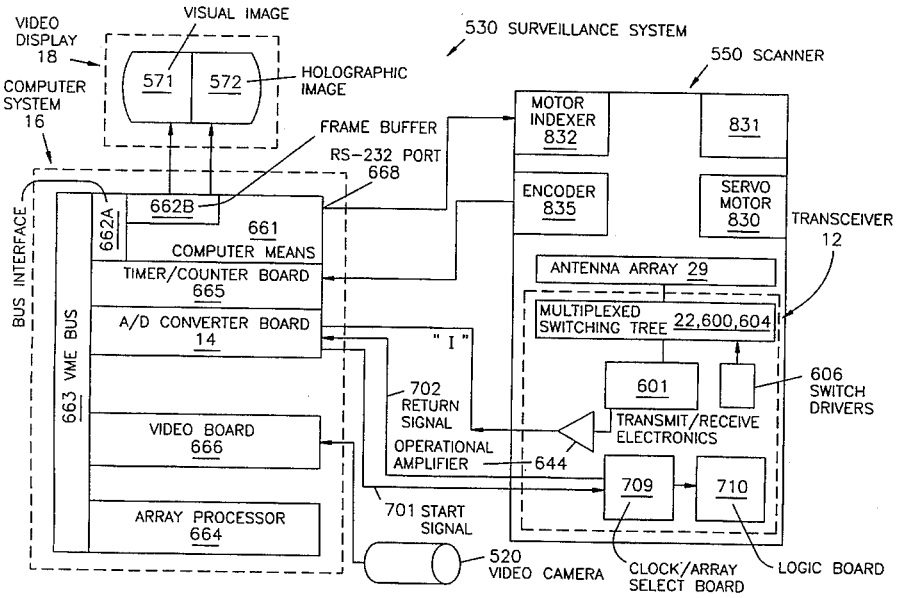
Primary Examiner—Ian J. Lobo

[57] **ABSTRACT**

A wideband holographic surveillance system including a transceiver for generating a plurality of electromagnetic waves; antenna for transmitting the electromagnetic waves toward a target at a plurality of predetermined positions in space; the transceiver also receiving and converting electromagnetic waves reflected from the target to electrical signals at a plurality of predetermined positions in space; a computer for processing the electrical signals to obtain signals corresponding to a holographic reconstruction of the target; and a display for displaying the processed information to determine nature of the target. The computer has instructions to apply a three dimensional backward wave algorithm.

24 Claims, 13 Drawing Sheets