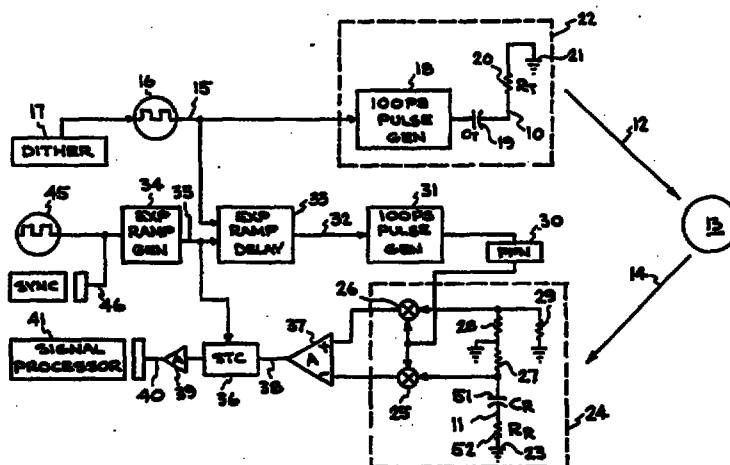




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(54) Title: AN IMPULSE RADAR WITH SWEEPED RANGE GATE



(57) Abstract

A radar range finder and hidden object locator is based on ultra-wide band radar with a high resolution swept range gate. The device generates an equivalent time amplitude scan with a typical range of 4 inches to 20 feet, and an analog range resolution as limited by a jitter of on the order of 0.01 inches. A differential sampling receiver is employed to effectively eliminate ringing and other aberrations induced in the receiver by the near proximity of the transmit antenna (10), so a background subtraction is not needed, simplifying the circuitry while improving performance. Techniques are used to reduce clutter in the receive signal, such as decoupling the receive (24) and transmit cavities (22) by placing a space between them, using conductive or radiative damping elements on the cavities, and using terminating plates on the sides of the openings. The antennas can be arranged in a side-by-side parallel spaced apart configuration or in a coplanar opposed configuration which significantly reduces main bang coupling.