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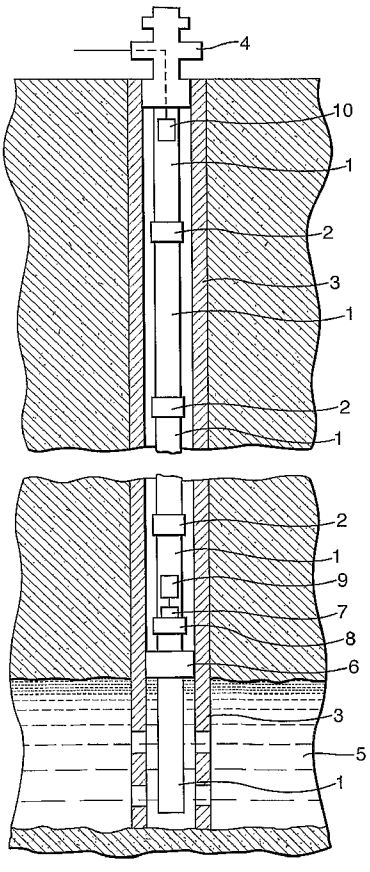
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(54) Title: ACOUSTIC TELEMETRY



(57) Abstract: A method of transmitting data acoustically through a tubular structure, such as a drill string or production tubing in an oil or gas well, predominantly comprising a series of tubing sections (1) joined end to end by couplings (2), at least a preponderance of the tubing sections having an axial length of at least a dimension X between couplings and at least a preponderance of the couplings having an axial length of no more than a dimension x, where X is substantially greater than x. The method comprises propagating acoustic signals along the structure, between transducers (9,10) over a distance N of at least 10X, in the form of tone bursts at least predominantly comprising a selected guided wave mode (preferably the L(0, 1) mode at low frequency) with a wavelength of at least 2x, and each burst having a temporal length of substantially less than 2N/C and preferably no more than 2X/C, where C is the phase velocity of the selected mode. In this way interference problems associated with Brillouin scattering in such structures can be overcome without excessive power consumption.

WO 2007/107734 A1

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