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(54) **Title:** PHASE-AMPLITUDE 3-D STEREO ENCODER AND DECODER

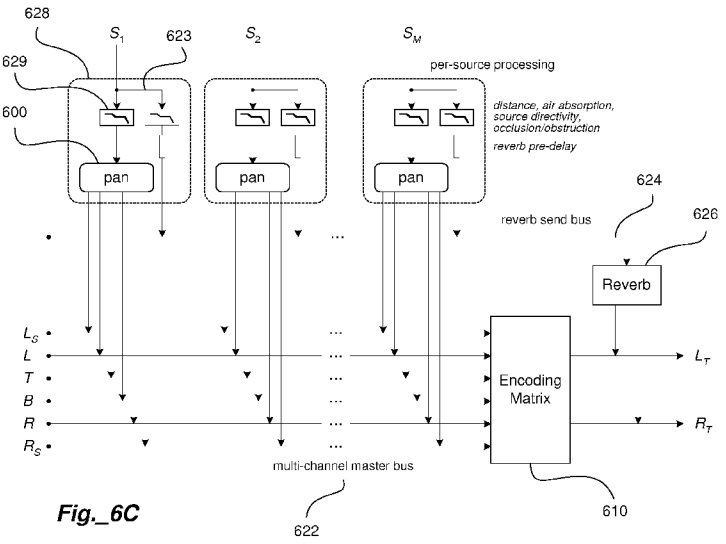

Fig._6C

(57) **Abstract:** A two-channel phase-amplitude stereo encoding and decoding scheme enabling flexible and spatially accurate interactive 3-D audio reproduction via standard audio-only two-channel transmission. The encoding scheme allows associating a 2-D or 3-D positional localization to each of a plurality of sound sources by use of frequency independent inter-channel phase and amplitude differences. The decoder is based on frequency-domain spatial analysis of 2-D or 3-D directional cues in a two-channel stereo signal and re-synthesis of these cues using any preferred spatialization technique, thereby allowing faithful reproduction of positional audio cues and reverberation or ambient cues over arbitrary multi-channel loudspeaker reproduction formats or over headphones, while preserving source separation despite the intermediate encoding over only two audio channels.

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