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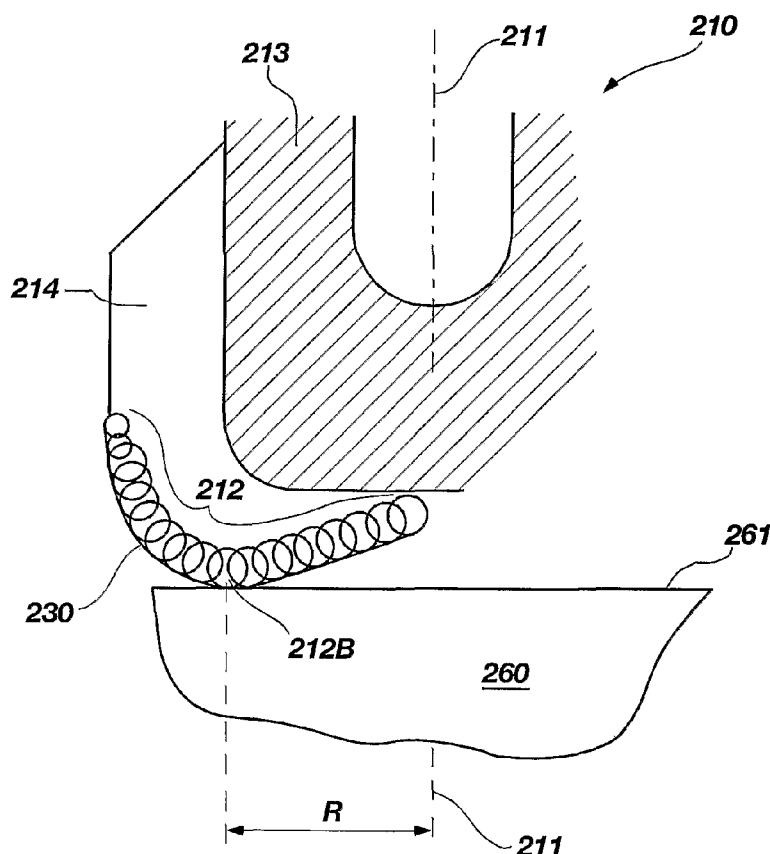
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[Continued on next page]

(54) Title: DRILLING TOOL EQUIPPED WITH IMPROVED CUTTING ELEMENT LAYOUT TO REDUCE CUTTER DAMAGE THROUGH FORMATION CHANGES, METHODS OF DESIGN THEREOF AND DRILLING THEREWITH



(57) Abstract: A drilling tool including at least two cutting elements (212B) (e.g., redundant or upon a selected profile region) sized, positioned, and configured thereon so as to contact or encounter a change (261) in at least one drilling characteristic of subterranean formation (260) along an anticipated drilling path prior to other cutting elements thereon encountering same is disclosed. Methods of designing a drilling tool are also disclosed including placing such cutting elements (212B) upon the cutting element profile in relation to a predicted boundary surface (261) along an anticipated drilling path. Methods of operating a drilling tool so as to initially contact a boundary surface between two differing regions of a subterranean formation drilled with at least two cutting elements is disclosed. The cutting elements configured on drilling tools and methods of the present invention may be designed for limiting lateral force or generating a lateral force having a desired direction during drilling associated therewith.



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- with international search report
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