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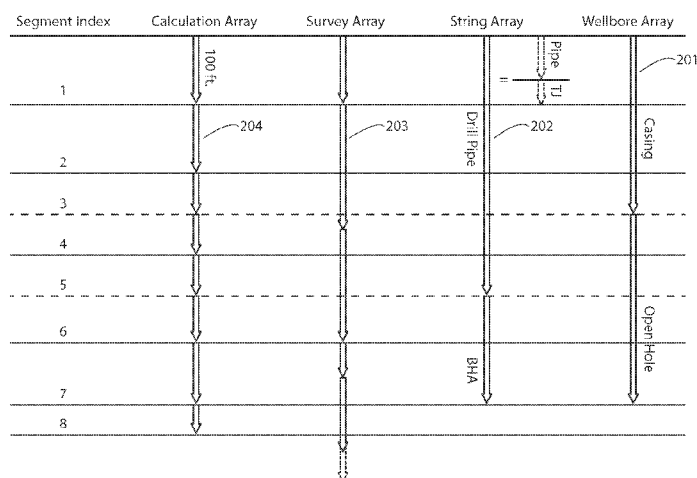
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(54) Title: LUMPED DATA MODELING OF TOOL JOINT EFFECTS IN UNDERBALANCED DRILLING

FIG.2



(57) Abstract: In one embodiment, the invention provides a computer implemented method for determining underbalanced drilling conditions. The method may include determining the number of tool joints in a segment of drill string, where each tool joint has a length and an inner diameter and an outer diameter, determining the total length of all tool joints in a segment of drill string, determining the total length of the segment of drill string excluding the tool length of all tool joints in the segment of drill string, wherein the drill string has an inner diameter and an outer diameter, determining the inner diameter of a segment of wellbore encompassing a segment of drill string, and determining a pressure drop in the segment of wellbore, based on the total length of all tool joints in the segment of drill string.