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(54) **Roller-cone bits, systems, drilling methods, and design methods with optimization of tooth orientation**

(57) Disclosed herein is a method for optimising drilling performance of a roller cone drill bit, comprising simulating drilling with the bit in a selected earth formation to determine at least one drilling performance parameter, adjusting, an orientation of at least one non-axisymmetric cutting element on the bit, repeating the simulating the drilling and determining the at least one performance parameter, and repeating the adjusting and simulating the drilling until the at least one performance parameter is determined to be at an optimum value.

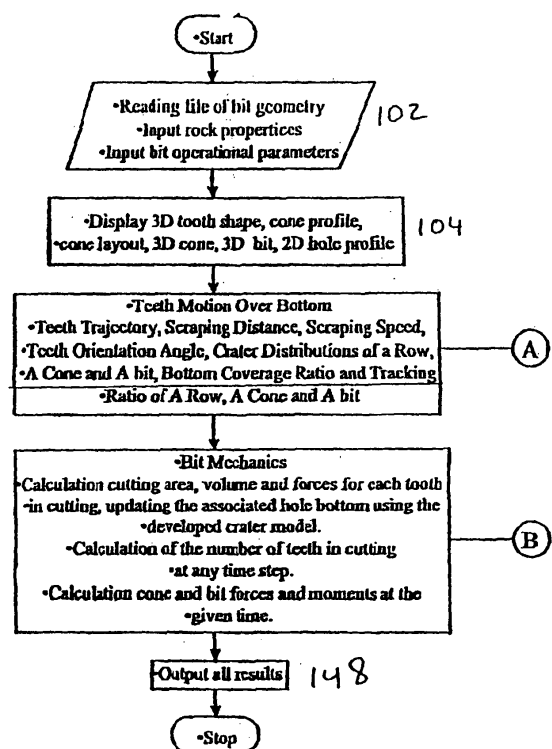


FIGURE 1A

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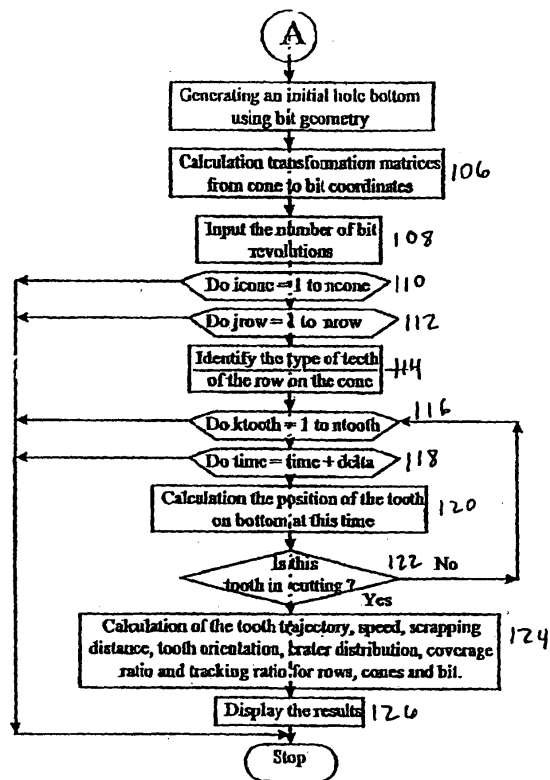


FIGURE 1B

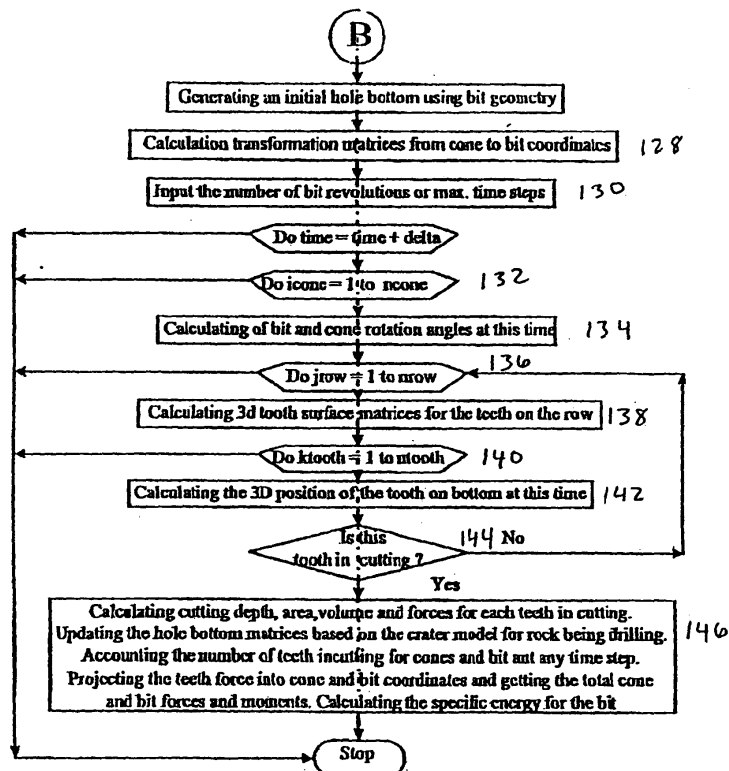


FIGURE 1C



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# EUROPEAN SEARCH REPORT

Application Number  
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| Place of search<br>The Hague                                                                                                                                                                                                                           |                                                                                                                                                                       | Date of completion of the search<br>14 February 2006                                                                                                                                                                                                                         | Examiner<br>Schouten, A                 |
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14-02-2006

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