elements and, as used herein, may be described as bottomhole cutter elements. Such cutters are intended to penetrate and remove formation material by gouging and fracturing formation material. In many applications, inner row cutter elements are relatively longer and sharper than those typically employed in the gage row or the heel row where the inserts ream the sidewall of the borehole via a scraping or shearing action.

[0012] A condition detrimental to efficient and economical drilling is known as "tracking." Tracking occurs when the inserts or cutting teeth of a cone cutter fall into the same depressions or indentations that were made by the bit during a previous revolution. Because the cutter elements penetrate into an indentation previously formed, rather than making a fresh indentation that is offset from prior indentations, the disintegration action of the cutting elements is less efficient. Thus, tracking prevents the cutter elements from fully and efficiently penetrating and disengaging the formation material at the bottom of the borehole. Further, tracking often results in a pattern of ridges and valleys, known as "rock teeth" or "rock ribs," on the bottom of the borehole. These ridges of uncut formation may contact the cone steel and tend to redistribute the weight-on-bit from the relatively sharp crests of the cutter elements to the surface of the cone cutters, thereby reducing the total force acting on the cutter elements and making it more difficult for the cutter elements to reach the uncut rock at the bottom of the valleys. Thus, tracking slows the drilling process and makes it more costly.

[0013] The contact between the cone steel and the ridges of uncut formation that often result from tracking not only impedes deep penetration of the cutter elements, but may lead to damage to the cone and the cone bearings. Such damage may occur because the cone itself becomes more directly exposed to significant impact or transient loads which may tend to cause premature seal and/or bearing failure. Thus, tracking is known to seriously impair the penetration rate, life and performance of an earth boring bit.

[0014] Increasing ROP while maintaining good cutter and bit life to increase the footage drilled is an important goal in order to decrease drilling time and recover valuable oil and gas more economically. Decreasing the likelihood of bit tracking would further that desirable goal.

[0015] Accordingly, there remains a need in the art for a drill bit and cutting structure that tends to reduce tracking so as to yield an increase in ROP and footage drilled, and eliminate other detrimental effects.

SUMMARY OF THE PREFERRED EMBODIMENTS

[0015a] In accordance with an aspect of the invention, there is provided a drill bit for drilling through earthen formations and forming a borehole, the bit comprising: a bit body having a bit axis; a plurality of rolling cone cutters mounted on the bit body and adapted for rotation about a cone axis; an array of cutter elements mounted in a plurality of differing radial positions with respect to the bit axis, the array of cutter elements within a band disposed in an intermesh region of a first rolling cone cutter, wherein each cutter element of the array has a diameter, a central axis, and a crest; wherein the cutter elements of the array form a cutting profile when rotated into a single plane, wherein the cutting profile of the array includes at least two cutter elements spaced apart by a distance measured between the axes of the two cutter elements at crest of the two cutter elements that is at least 50% of the diameter of any cutter element within the array.

[0016] In accordance with at least one embodiment of the invention, a drill bit for drilling through earthen formations and forming a borehole comprises a bit body having a bit axis. In addition, the bit