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Bulpett et al.

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(54) **NEGATIVE HARDNESS GRADIENT INNER CORE FOR DUAL CORE GOLF BALL**

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(58) **Field of Classification Search**
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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,784,209	A	1/1974	Berman
3,986,802	A	10/1976	Isom
4,570,937	A	2/1986	Yamada

(Continued)

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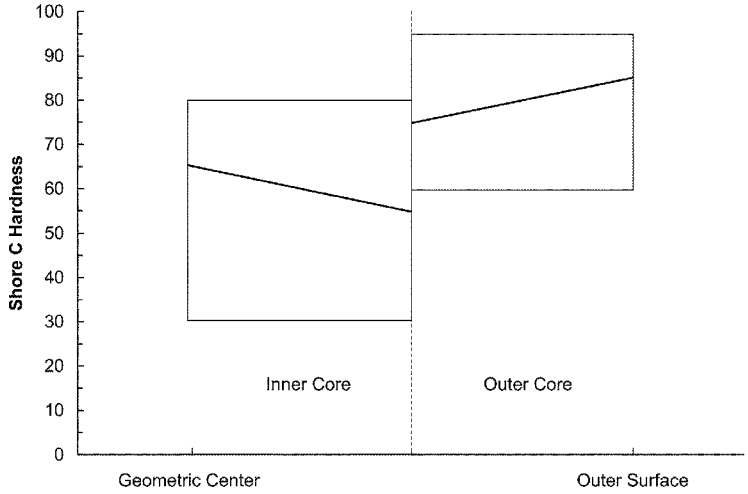
(57) **ABSTRACT**

A golf ball including an inner core having a first outer surface and a geometric center and being formed from a first substantially homogenous composition such that the inner core has a hardness of about 60 Shore C to about 90 Shore C; an outer core layer disposed about the inner core having a second outer surface and being formed from a second substantially homogenous composition such that the outer core layer has a hardness of about 60 Shore C to about 95 Shore C; and a cover layer disposed about the outer core layer. The geometric center and first and second outer surfaces each have a hardness, the hardness of the second outer surface being lower than the hardness of the geometric center to define a negative hardness gradient.

14 Claims, 3 Drawing Sheets