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**Zucherman et al.**

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(54) **BONE ANCHOR WITH A YOKE-SHAPED ANCHOR HEAD FOR A DYNAMIC STABILIZATION AND MOTION PRESERVATION SPINAL IMPLANTATION SYSTEM AND METHOD**

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**A61B 17/70** (2006.01)  
(52) **U.S. Cl.** ..... **606/264**  
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See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

4,041,939 A	8/1977	Hall
4,065,817 A	1/1978	Branemark et al.
4,347,845 A	9/1982	Mayfield
4,369,770 A	1/1983	Bacal et al.
4,382,438 A	5/1983	Jacobs
4,409,968 A	10/1983	Drummond
4,411,259 A	10/1983	Drummond
4,422,451 A	12/1983	Kalamchi
4,479,491 A	10/1984	Martin
4,567,885 A	2/1986	Androphy
4,573,454 A	3/1986	Hoffman
4,604,995 A	8/1986	Stephens et al.
4,611,580 A	9/1986	Wu
4,611,581 A	9/1986	Steffee

(Continued)

**FOREIGN PATENT DOCUMENTS**

DE	2649042 B1	10/1976
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(Continued)

**OTHER PUBLICATIONS**

International Search Report for PCT/US/08/65443 dated Sep. 16, 2008, 4 pages.

(Continued)

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(57) **ABSTRACT**

A dynamic stabilization, motion preservation spinal implant system includes an anchor system, a horizontal rod system and a vertical rod system. The systems are modular so that various constructs and configurations can be created and customized to a patient.

**21 Claims, 39 Drawing Sheets**

