



(12) **United States Patent**
Michelson

(10) **Patent No.:** **US 8,444,696 B2**
(45) **Date of Patent:** ***May 21, 2013**

(54) **ANATOMIC SPINAL IMPLANT HAVING ANATOMIC BEARING SURFACES**

(75) Inventor: **Gary Karlin Michelson**, Venice, CA (US)

(73) Assignee: **Warsaw Orthopedic, Inc.**, Warsaw, IN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 3 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **13/235,998**

(22) Filed: **Sep. 19, 2011**

(65) **Prior Publication Data**

US 2012/0071982 A1 Mar. 22, 2012

Related U.S. Application Data

(60) Continuation of application No. 12/807,489, filed on Sep. 7, 2010, now Pat. No. 8,021,430, which is a continuation of application No. 10/926,766, filed on Aug. 26, 2004, now Pat. No. 7,789,914, which is a continuation of application No. 10/237,751, filed on Sep. 9, 2002, now Pat. No. 7,503,933, which is a continuation of application No. 09/412,090, filed on Oct. 4, 1999, now Pat. No. 6,447,544, which is a continuation of application No. 08/813,283, filed on Mar. 10, 1997, now Pat. No. 6,302,914, which is a division of application No. 08/482,146, filed on Jun. 7, 1995, now Pat. No. 5,609,635.

(51) **Int. Cl.**
A61F 2/44 (2006.01)

(52) **U.S. Cl.**
USPC 623/17.16

(58) **Field of Classification Search**

USPC 623/17.11-17.16, 16.11, 14.12, 18.11; 606/246-249, 99
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,372,622 A 3/1945 Fasslo
2,677,369 A 5/1954 Knowles
3,298,372 A 1/1967 Feinberg
3,605,123 A 9/1971 Hahn
3,848,601 A 11/1974 Ma et al.

(Continued)

FOREIGN PATENT DOCUMENTS

WO WO 93/01771 A1 2/1993
WO WO 95/08306 3/1995

OTHER PUBLICATIONS

Request for Inter Partes Reexamination of U.S. Patent No. 8,021,430, dated Sep. 14, 2012, 477 pages.

(Continued)

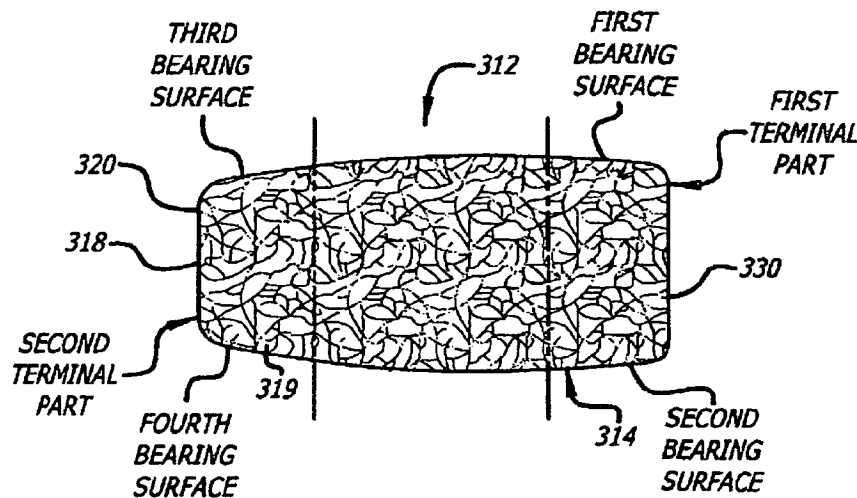
Primary Examiner — Alvin Stewart

(74) *Attorney, Agent, or Firm* — Martin & Ferraro, LLP

(57) **ABSTRACT**

The present application is directed to an interbody spinal implant having a structural configuration that provides for maintaining the normal anatomic relationship of two adjacent vertebrae of the spine. The spinal implant is sized to fit within the disc space created by the removal of disc material between two adjacent vertebrae and conform wholly, or in part, to the disc space created. The spinal implant of the present invention has first and second sides with upper and lower bearing surfaces that form a support structure for bearing against the end plates of the adjacent vertebrae. The upper and lower bearing surfaces of the first and second sides are shaped to create an anatomic fit with the endplates of the adjacent vertebrae.

19 Claims, 11 Drawing Sheets



U.S. PATENT DOCUMENTS						
3,867,728	A	2/1975	Stubstad et al.	5,258,043	A 11/1993	Stone
3,875,595	A	4/1975	Froning	5,304,191	A 4/1994	Gosselin
3,905,047	A	9/1975	Long	5,306,308	A 4/1994	Gross et al.
3,948,262	A	4/1976	Zaffaroni	5,306,309	A 4/1994	Wagner et al.
3,952,334	A	4/1976	Bokros et al.	5,360,430	A 11/1994	Lin
3,987,499	A	10/1976	Scharbach et al.	5,370,697	A 12/1994	Baumgartner
D245,259	S	8/1977	Shen	5,397,364	A 3/1995	Kozak et al.
4,070,514	A	1/1978	Eatherly et al.	5,425,772	A 6/1995	Brantigan
4,168,326	A	9/1979	Broemer et al.	5,443,514	A 8/1995	Steffee
4,309,777	A	1/1982	Patil	5,445,639	A 8/1995	Kuslich et al.
4,349,921	A	9/1982	Kuntz	5,458,638	A 10/1995	Kuslich et al.
4,401,112	A	8/1983	Rezaian	5,458,643	A 10/1995	Oka et al.
4,405,319	A	9/1983	Cosentino	5,484,437	A 1/1996	Michelson
4,439,152	A	3/1984	Small	5,489,307	A 2/1996	Kuslich et al.
4,501,269	A	2/1985	Bagby	5,489,308	A 2/1996	Kuslich et al.
4,507,115	A	3/1985	Kambara et al.	5,499,984	A 3/1996	Steiner et al.
4,535,485	A	8/1985	Ashman et al.	5,514,180	A 5/1996	Heggeness et al.
4,542,539	A	9/1985	Rowe, Jr. et al.	5,522,899	A 6/1996	Michelson
4,545,374	A	10/1985	Jacobson	5,534,028	A 7/1996	Bao et al.
4,547,390	A	10/1985	Ashman et al.	5,554,191	A 9/1996	Lahille et al.
4,553,273	A	11/1985	Wu	5,571,109	A 11/1996	Bertagnoli
4,554,914	A	11/1985	Kapp et al.	5,571,190	A 11/1996	Ulrich et al.
4,566,466	A	1/1986	Ripple et al.	5,607,424	A 3/1997	Tropiano
4,599,086	A	7/1986	Doty	5,609,635	A 3/1997	Michelson
4,604,995	A	8/1986	Stephens et al.	5,609,636	A 3/1997	Kohrs et al.
4,608,052	A	8/1986	Van Kampen et al.	5,609,637	A 3/1997	Biedermann et al.
4,634,720	A	1/1987	Dorman et al.	5,645,596	A 7/1997	Kim et al.
4,636,217	A	1/1987	Ogilvie et al.	5,658,335	A 8/1997	Allen
4,636,526	A	1/1987	Dorman et al.	5,658,337	A 8/1997	Kohrs et al.
4,645,503	A	2/1987	Lin et al.	5,665,122	A 9/1997	Kambin
4,655,777	A	4/1987	Dunn et al.	5,669,909	A 9/1997	Zdeblick et al.
4,661,536	A	4/1987	Dorman et al.	5,683,463	A 11/1997	Godefroy et al.
4,693,721	A	9/1987	Ducheyne	5,766,252	A 6/1998	Henry et al.
4,698,375	A	10/1987	Dorman et al.	5,769,897	A 6/1998	Härle
4,714,469	A	12/1987	Kenna	5,776,199	A 7/1998	Michelson
4,721,103	A	1/1988	Freedland	5,782,919	A 7/1998	Zdeblick et al.
4,743,256	A	5/1988	Brantigan	5,800,547	A 9/1998	Schäfer et al.
4,759,766	A	7/1988	Buettner-Janz et al.	5,824,094	A 10/1998	Serhan et al.
4,759,769	A	7/1988	Hedman et al.	5,861,041	A 1/1999	Tienboon
4,763,644	A	8/1988	Webb	5,888,223	A 3/1999	Bray
4,820,305	A	4/1989	Harms et al.	5,888,224	A 3/1999	Beckers et al.
4,834,757	A	5/1989	Brantigan	5,893,890	A 4/1999	Pisharodi
4,863,476	A	9/1989	Shepperd	5,980,522	A 11/1999	Koros et al.
4,863,477	A	9/1989	Monson	5,984,967	A 11/1999	Zdeblick et al.
4,865,603	A	9/1989	Noiles	6,059,829	A 5/2000	Schläpfer et al.
4,877,020	A	10/1989	Vich	6,149,686	A 11/2000	Kuslich et al.
4,878,915	A	11/1989	Brantigan	6,159,214	A 12/2000	Michelson
4,904,261	A	2/1990	Dove et al.	6,302,914	B1 10/2001	Michelson
4,911,718	A	3/1990	Lee et al.	6,447,544	B1 9/2002	Michelson
4,936,848	A	6/1990	Bagby	6,558,423	B1 5/2003	Michelson
4,955,908	A	9/1990	Frey et al.	6,613,091	B1 9/2003	Zdeblick et al.
4,961,740	A	10/1990	Ray et al.	7,056,342	B2 6/2006	Michelson
5,015,247	A	5/1991	Michelson	7,503,933	B2 3/2009	Michelson
5,026,373	A	6/1991	Ray et al.	7,789,914	B2 9/2010	Michelson
5,055,104	A	10/1991	Ray	8,021,430	B2 9/2011	Michelson
5,062,845	A	11/1991	Kuslich et al.			
5,071,437	A	12/1991	Steffee			
5,122,130	A	6/1992	Keller			
5,123,926	A	6/1992	Pisharodi			
5,171,278	A	12/1992	Pisharodi			
5,190,548	A	3/1993	Davis			
5,192,327	A	3/1993	Brantigan			
5,246,458	A	9/1993	Graham			
5,250,061	A	10/1993	Michelson			
5,258,031	A	11/1993	Salib et al.			

OTHER PUBLICATIONS

Office Action from Reexamination Proceeding No. 95/002,380; mailed Nov. 29, 2012; 18 pages.

Amendment in Reexam Control No. 95/002,380, filed Feb. 19, 2013, 15 pages.

Third Party Comments in Reexam Control No. 95/002,380, filed Mar. 21, 2013, 52 pages.

Decision Expunging Papers in Reexamination Control No. 95/002,380, Mar. 26, 2013, 4 pages.

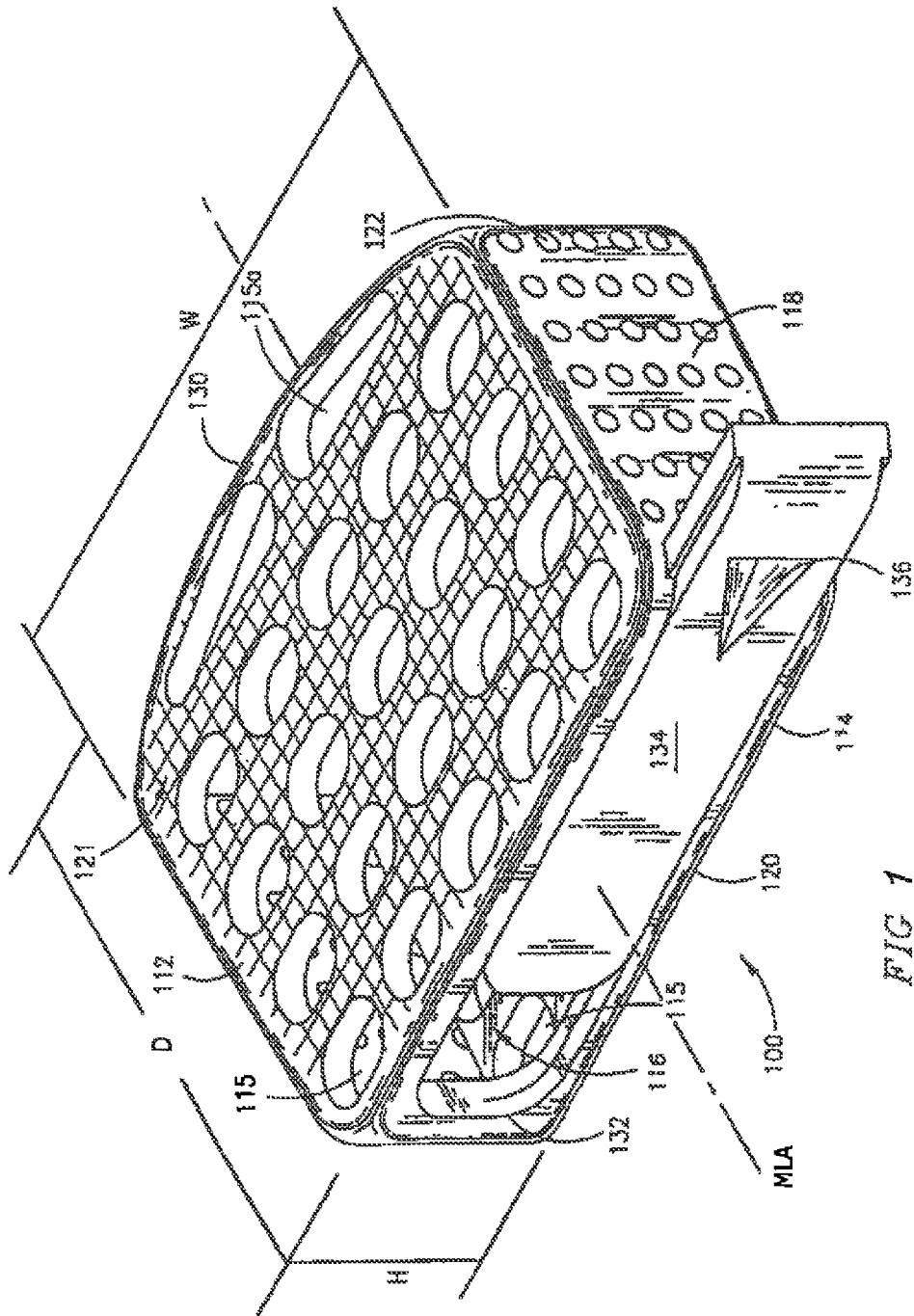


FIG 1

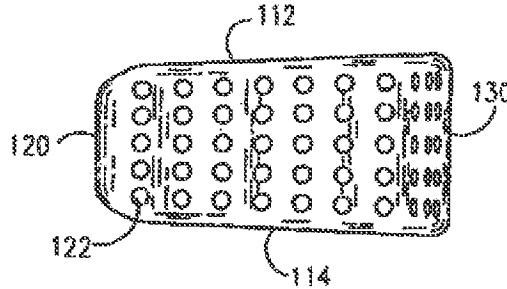


FIG 3

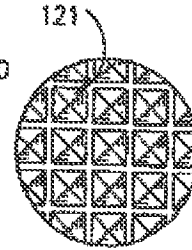


FIG 7

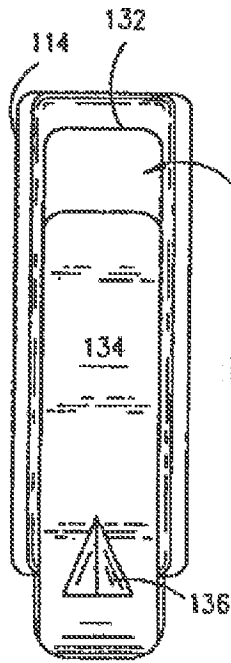


FIG 5

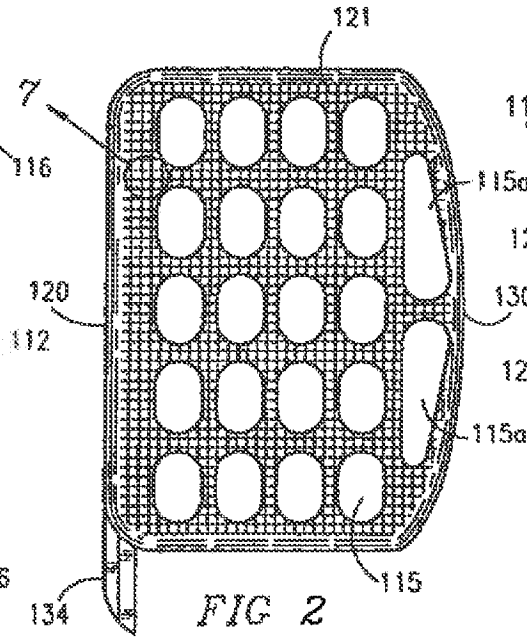


FIG 2

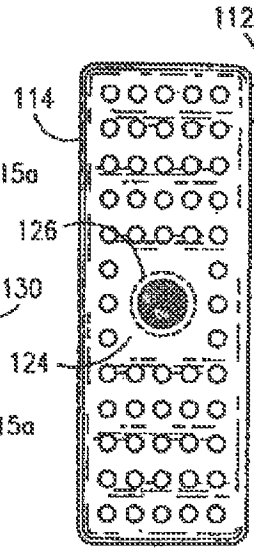


FIG 6

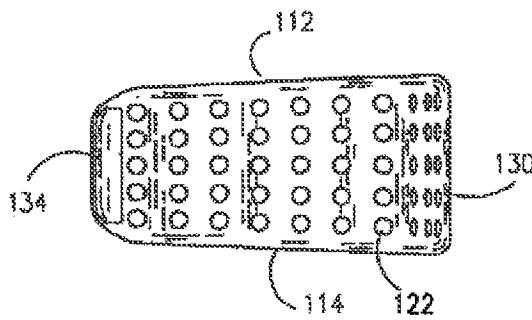


FIG 4

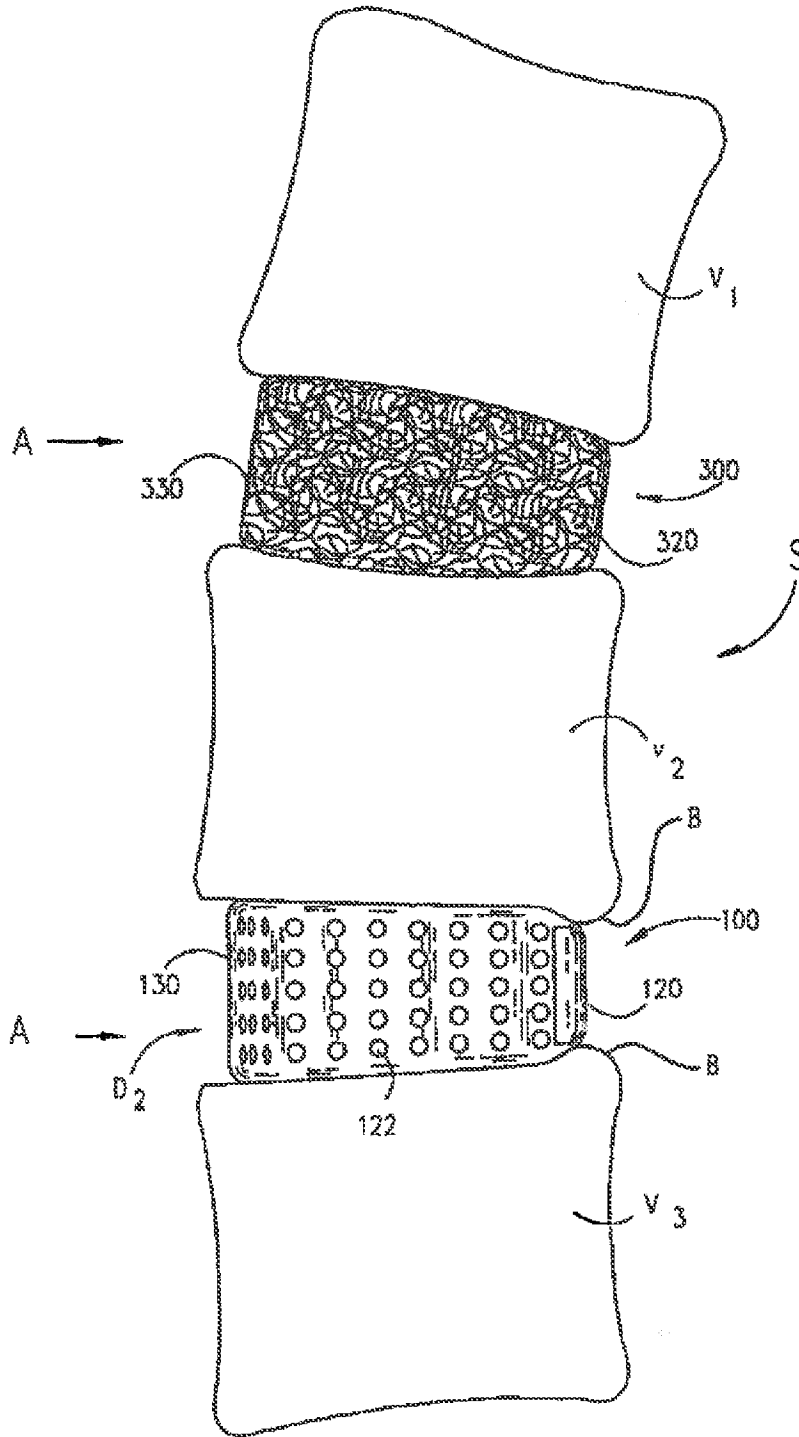


FIG 7A

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.