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(54) WIRELESS BED CONNECTIVITY

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3 (2006.01)

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(56) References Cited

U.S. PATENT DOCUMENTS

2,330,356	A	9/1943	Belliveau
2,335,524	A	11/1943	Lomax
2,736,888	A	2/1956	McLain
2,896,021	A	7/1959	Philipps
3,098,220	A	7/1963	De Graaf
3,439,320	A	4/1969	Ward
3,478,344	A	11/1969	Schwitzgebel et al.
3,553,383	A	1/1971	Rochtus
3,599,199	A	8/1971	Bunting
3,599,200	A	8/1971	Bunting
3,696,384	A	10/1972	Lester
3,739,329	A	6/1973	Lester

(Continued)

FOREIGN PATENT DOCUMENTS

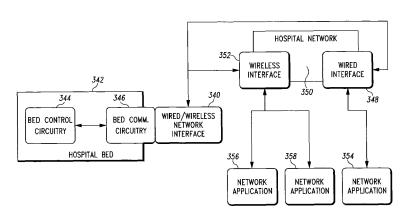
WO WO 02/091297 A1 11/2002 WO WO 2004/036390 A2 4/2004

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(57) ABSTRACT

A hospital bed has wireless communication circuitry operable to transmit wirelessly bed status data. A surface supported by the bed has wireless communication circuitry operable to transmit wirelessly surface status data. The wireless communication circuitry of the hospital bed and the wireless communication circuitry of the surface communicate with a network independently. A hospital bed with an integrated surface has wireless communication circuitry operable to transmit wirelessly bed status data and surface status data. The wireless bed status data and the wireless surface status data are received by wireless access points of a network of a healthcare facility.

51 Claims, 16 Drawing Sheets





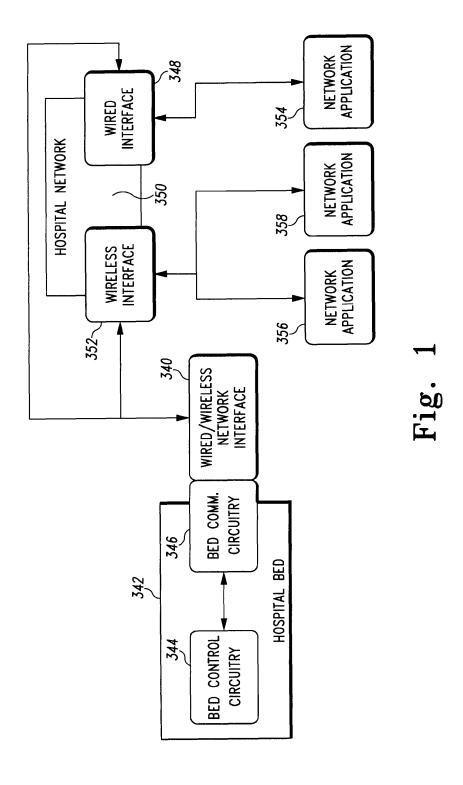
U.S. PATENT	DOCUMENTS	5,461,390 A	10/1995	Hoshen
		5,475,367 A	12/1995	Prevost
3,767,859 A 10/1973	Doering et al.	5,534,851 A	7/1996	
3,805,265 A 4/1974				
		5,537,459 A		Price et al.
	Adams et al.	5,548,637 A	8/1996	Heller et al.
	Akerberg	5,549,113 A	8/1996	Halleck et al.
4,067,005 A 1/1978	Levy et al.	5,561,412 A	10/1996	Novak et al.
	Trenkler et al.			
	McBride et al.	5,568,119 A		Schipper et al.
		5,576,952 A		Stutman et al.
	Drew et al.	5,579,001 A	11/1996	Dempsey et al.
4,216,462 A 8/1980	McGrath et al.	5,588,005 A	12/1996	Ali et al.
4,225,953 A 9/1980	Simon et al.	5,594,786 A		Chaco et al.
4,228,426 A 10/1980				
		5,621,388 A		Sherburne et al.
4,237,344 A 12/1980		5,635,907 A	6/1997	Bernard et al.
	Sakarya	5,636,245 A	6/1997	Ernst et al.
4,275,385 A 6/1981	White	5,640,953 A	6/1997	Bishop et al.
4,279,433 A 7/1981	Petaia	5,650,769 A		Campana, Jr.
	Natitus et al.			
' '		5,650,770 A		Schlager et al.
	Blevins et al.	5,664,270 A	9/1997	Bell et al.
4,356,475 A 10/1982	Neumann et al.	5,682,139 A	10/1997	Pradeep et al.
4,418,334 A 11/1983	Burnett	5,686,888 A		Welles, II
	Burnett			
		5,686,902 A		Reis et al.
	Lamb et al.	5,687,734 A	11/1997	Dempsey et al.
4,495,495 A 1/1985	Ormanns et al.	5,689,229 A	11/1997	Chaco et al.
4,495,496 A 1/1985	Miller, III	5,691,980 A		Welles, II et al.
	Fleck et al.			Ulrich et al.
		5,699,038 A		
	Andersen	5,705,980 A	1/1998	Shapiro
4,578,671 A 3/1986	Flowers	5,708,421 A	1/1998	Bovd
4,593,273 A 6/1986	Narcisse	5,713,856 A		Eggers et al.
	Ross et al.			CC
	Shipley	5,719,761 A		Gatti et al.
		5,731,757 A	3/1998	Layson, Jr.
	Aires et al.	5,742,237 A	4/1998	Bledsoe
4,680,790 A 7/1987	Packard et al.	5,751,246 A	5/1998	Hertel
4,709,330 A 11/1987	Yokoi et al.		5/1998	
	Konneker	5,752,917 A		
		5,760,704 A	6/1998	Barton et al.
	Konneker	5,767,791 A	6/1998	Stoop et al.
4,792,798 A 12/1988	Wilowski	5,781,442 A	7/1998	Engleson et al.
4,795,905 A 1/1989	Zierhut			Eagleson et al.
	Hawkins et al.	5,793,290 A		
		5,808,564 A		Simms et al.
	Currier	5,812,056 A	9/1998	Law
4,833,467 A 5/1989	Kobayashi et al.	5,822,418 A	10/1998	Yacenda et al.
4,837,568 A 6/1989	Snaper	5,822,544 A		Chaco et al.
	Wolk et al.			
		5,838,223 A		Gallant et al.
	Ghahariiran	5,844,488 A	12/1998	Musick
4,947,152 A 8/1990	Hodges	5,867,821 A	2/1999	Ballantyne et al.
4,955,000 A 9/1990	Nastrom			
			3/1000	Rebetock et al
4 967 195 A 10/1990		5,877,675 A		Rebstock et al.
	Shipley	5,933,488 A	8/1999	Marcus et al.
4,990,892 A 2/1991	Shipley Guest et al.		8/1999 8/1999	Marcus et al. Fuchs
4,990,892 A 2/1991	Shipley	5,933,488 A 5,936,539 A	8/1999 8/1999	Marcus et al. Fuchs
4,990,892 A 2/1991 4,998,095 A 3/1991	Shipley Guest et al.	5,933,488 A 5,936,539 A 5,942,986 A	8/1999 8/1999 8/1999	Marcus et al. Fuchs Shabot et al.
4,990,892 A 2/1991 4,998,095 A 3/1991 4,998,939 A 3/1991	Shipley Guest et al. Shields Potthast et al.	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A	8/1999 8/1999 8/1999 8/1999	Marcus et al. Fuchs Shabot et al. Flach et al.
4,990,892 A 2/1991 4,998,095 A 3/1991 4,998,939 A 3/1991 5,006,830 A 4/1991	Shipley Guest et al. Shields Potthast et al. Merritt	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A	8/1999 8/1999 8/1999 8/1999 10/1999	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr.
4,990,892 A 2/1991 4,998,095 A 3/1991 4,998,939 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al.	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A	8/1999 8/1999 8/1999 8/1999 10/1999	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al.
4,990,892 A 2/1991 4,998,095 A 3/1991 4,998,939 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,041,086 A 8/1991	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al.	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A	8/1999 8/1999 8/1999 8/1999 10/1999	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr.
4,990,892 A 2/1991 4,998,095 A 3/1991 4,998,939 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al.	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A	8/1999 8/1999 8/1999 8/1999 10/1999 10/1999	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al.
4,990,892 A 2/1991 4,998,095 A 3/1991 4,998,939 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,041,086 A 8/1991 5,062,151 A 10/1991	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 5,995,937 A	8/1999 8/1999 8/1999 10/1999 10/1999 11/1999	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al.
4,990,892 A 2/1991 4,998,095 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,041,086 A 8/1991 5,062,151 A 10/1991 5,065,154 A 11/1991	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 5,995,937 A 6,014,633 A	8/1999 8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 1/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al.
4,990,892 A 2/1991 4,998,995 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,041,086 A 8/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al.	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 5,995,937 A 6,014,633 A 6,057,758 A	8/1999 8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 11/1999 1/2000 5/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al.
4,990,892 A 2/1991 4,998,095 A 3/1991 4,998,939 A 3/1991 5,006,830 A 4/1991 5,041,086 A 8/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 5,995,937 A 6,014,633 A	8/1999 8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 1/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al.
4,990,892 A 2/1991 4,998,095 A 3/1991 4,998,939 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 5,995,937 A 6,014,633 A 6,057,758 A	8/1999 8/1999 8/1999 8/1999 10/1999 11/1999 11/1999 1/2000 5/2000 5/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. DeBusk et al. Koenig
4,990,892 A 2/1991 4,998,095 A 3/1991 4,998,939 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 5,995,937 A 6,014,633 A 6,057,758 A 6,057,758 A 6,057,782 A	8/1999 8/1999 8/1999 8/1999 10/1999 11/1999 11/1999 1/2000 5/2000 5/2000 5/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott
4,990,892 A 2/1991 4,998,095 A 3/1991 5,096,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 6,014,633 A 6,057,758 A 6,057,782 A 6,067,019 A 6,076,166 A	8/1999 8/1999 8/1999 8/1999 10/1999 11/1999 11/2000 5/2000 5/2000 5/2000 6/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al.
4,990,892 A 2/1991 4,998,993 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,041,086 A 8/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,153,584 A 10/1992	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 6,014,633 A 6,057,758 A 6,057,782 A 6,067,019 A 6,076,166 A 6,078,261 A *	8/1999 8/1999 8/1999 8/1999 10/1999 11/1999 11/2000 5/2000 5/2000 6/2000 6/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,993 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,041,086 A 8/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,153,584 A 10/1992 5,266,944 A 11/1993	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al.	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 5,995,937 A 6,014,633 A 6,057,758 A 6,057,758 A 6,067,019 A 6,076,166 A 6,078,261 A * 6,085,493 A	8/1999 8/1999 8/1999 8/1999 10/1999 11/1999 11/2000 5/2000 5/2000 6/2000 6/2000 7/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,095 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,126,944 A 11/1993 5,266,944 A 11/1993 5,291,399 A 3/1994	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 6,014,633 A 6,057,758 A 6,057,782 A 6,067,019 A 6,076,166 A 6,078,261 A *	8/1999 8/1999 8/1999 8/1999 10/1999 11/1999 11/2000 5/2000 5/2000 6/2000 6/2000 7/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,095 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,126,944 A 11/1993 5,266,944 A 11/1993 5,291,399 A 3/1994	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al.	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,995,937 A 6,014,633 A 6,057,758 A 6,057,758 A 6,057,782 A 6,076,166 A 6,076,166 A 6,076,261 A 6,078,261 A 6,088,362 A	8/1999 8/1999 8/1999 8/1999 10/1999 11/1999 11/1999 1/2000 5/2000 5/2000 6/2000 6/2000 7/2000 7/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Demsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,095 A 3/1991 5,096,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,153,584 A 10/1992 5,266,944 A 11/1993 5,291,399 A 3/1994 5,319,355 A 6/1994	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,971,728 A 6,014,633 A 6,057,758 A 6,057,752 A 6,067,019 A 6,078,261 A 6,078,261 A 6,088,362 A 6,093,146 A	8/1999 8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 1/2000 5/2000 5/2000 6/2000 6/2000 7/2000 7/2000 7/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,993 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,065,154 A 11/1991 5,065,154 A 4/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,153,584 A 10/1992 5,266,944 A 11/1993 5,291,399 A 3/1994 5,319,355 A 6/1994 5,319,355 A 6/1994	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Welch et al	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 6,014,633 A 6,057,758 A 6,057,782 A 6,067,019 A 6,076,166 A 6,078,261 A * 6,088,493 A 6,088,493 A 6,093,146 A 6,093,146 A	8/1999 8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 11/1999 12/2000 5/2000 6/2000 6/2000 7/2000 7/2000 7/2000 8/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,993 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,041,086 A 8/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,133,584 A 10/1992 5,266,944 A 11/1993 5,291,399 A 3/1994 5,319,355 A 6/1994 5,319,363 A * 6/1994 5,319,363 A * 6/1994 5,357,254 A 10/1994	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Welch et al	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,995,937 A 6,014,633 A 6,057,758 A 6,057,758 A 6,057,758 A 6,078,261 A 6,076,166 A 6,078,261 A 6,078,261 A 6,088,362 A 6,093,146 A 6,093,146 A 6,093,308 A 6,133,837 A	8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 11/1999 1/2000 5/2000 6/2000 6/2000 7/2000 7/2000 7/2000 7/2000 8/2000 10/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,095 A 3/1991 5,096,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,153,584 A 10/1992 5,266,944 A 11/1993 5,291,399 A 3/1994 5,319,363 A * 6/1994 5,357,254 A 10/1994 5,357,5604 A 12/1994	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Welch et al. Shipley Saiser Muray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Welch et al. Saio-Saio-Saio-Saio-Saio-Saio-Saio-Saio-	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 6,014,633 A 6,057,758 A 6,057,782 A 6,067,019 A 6,076,166 A 6,078,261 A * 6,088,493 A 6,088,493 A 6,093,146 A 6,093,146 A	8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 11/1999 1/2000 5/2000 6/2000 6/2000 7/2000 7/2000 7/2000 7/2000 8/2000 10/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,095 A 3/1991 5,096,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,153,584 A 10/1992 5,266,944 A 11/1993 5,291,399 A 3/1994 5,319,365 A * 6/1994 5,337,254 A 10/1994 5,337,254 A 10/1994 5,337,256 A 12/1994	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Welch et al	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,995,937 A 6,014,633 A 6,057,758 A 6,057,758 A 6,057,758 A 6,078,261 A 6,076,166 A 6,078,261 A 6,078,261 A 6,088,362 A 6,093,146 A 6,093,146 A 6,093,308 A 6,133,837 A	8/1999 8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 1/2000 5/2000 5/2000 6/2000 7/2000 7/2000 7/2000 8/2000 10/2000 11/2000	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,095 A 3/1991 5,096,830 A 4/1991 5,027,314 A 6/1991 5,041,086 A 8/1991 5,062,151 A 10/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,137,033 A 8/1992 5,1366,944 A 11/1993 5,291,399 A 3/1994 5,319,363 A 6/1994 5,357,254 A 10/1994 5,377,5604 A 12/1994 5,396,224 A 3/1995	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Welch et al	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 6,014,633 A 6,057,782 A 6,057,782 A 6,067,019 A 6,076,166 A 6,078,261 A * 6,085,493 A 6,085,493 A 6,093,146 A 6,093,146 A 6,097,308 A 6,133,837 A 6,133,837 A 6,147,592 A 6,183,417 B1	8/1999 8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 1/2000 5/2000 6/2000 6/2000 7/2000 7/2000 7/2000 8/2000 10/2000 11/2000 11/2000 1/2000 2/2001	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,993 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,153,584 A 10/1992 5,266,944 A 11/1993 5,291,399 A 3/1994 5,319,355 A 6/1994 5,375,564 A 10/1994 5,375,604 A 12/1994 5,375,604 A 12/1994 5,396,224 A 3/1995 5,396,227 A 3/1995	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Welch et al. Jr. Kelly et al. Dukes et al. Carroll et al. Carroll et al. Carroll et al.	5,933,488 A 5,936,539 A 5,942,659 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 6,014,633 A 6,057,758 A 6,057,758 A 6,067,019 A 6,076,166 A 6,078,261 A * 6,088,362 A 6,093,146 A 6,093,146 A 6,097,308 A 6,133,837 A 6,133,837 A 6,147,592 A 6,183,417 B1 6,208,250 B1	8/1999 8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 11/1999 11/2000 5/2000 6/2000 6/2000 6/2000 7/2000 7/2000 7/2000 10/2000 10/2000 11/2000 2/2001 3/2001	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,993 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,065,154 A 11/1991 5,065,154 A 4/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,153,584 A 10/1992 5,266,944 A 11/1993 5,291,399 A 3/1994 5,319,355 A 6/1994 5,319,363 A * 6/1994 5,375,604 A 12/1994 5,375,604 A 12/1994 5,375,604 A 12/1994 5,396,224 A 3/1995 5,346,695 A 5/1995	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Welch et al. Welch et al. Linwood et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 6,017,728 A 5,995,937 A 6,014,633 A 6,057,758 A 6,057,752 A 6,076,166 A 6,076,166 A 6,078,261 A 6,085,493 A 6,083,362 A 6,093,146 A 6,093,146 A 6,097,308 A 6,133,837 A 6,133,837 A 6,133,417 B1 6,208,250 B1 6,241,668 B1	8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 11/1999 1/2000 5/2000 6/2000 6/2000 7/2000 7/2000 8/2000 10/2000 11/2000 2/2001 3/2001 6/2001	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,095 A 3/1991 5,098,939 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,153,584 A 10/1992 5,266,944 A 11/193 5,291,399 A 3/1994 5,319,365 A 6/1994 5,375,254 A 10/1994 5,375,604 A 12/1994 5,396,224 A 3/1995 5,396,227 A 3/1995 5,416,695 A 5/1995 5,434,775 A 7/1995	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Welch et al. Linwood et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Carroll et al. Chaco Cussek Welch et al. Linwood et al. Situtman et al. Sims et al.	5,933,488 A 5,936,539 A 5,942,659 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 6,014,633 A 6,057,758 A 6,057,758 A 6,067,019 A 6,076,166 A 6,078,261 A * 6,088,362 A 6,093,146 A 6,093,146 A 6,097,308 A 6,133,837 A 6,133,837 A 6,147,592 A 6,183,417 B1 6,208,250 B1	8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 11/1999 1/2000 5/2000 6/2000 6/2000 7/2000 7/2000 8/2000 10/2000 11/2000 2/2001 3/2001 6/2001	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,095 A 3/1991 5,098,939 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,065,154 A 11/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,153,584 A 10/1992 5,266,944 A 11/1993 5,291,399 A 3/1994 5,319,355 A 6/1994 5,357,254 A 10/1994 5,357,254 A 10/1994 5,357,254 A 10/1994 5,357,254 A 3/1995 5,396,227 A 3/1995 5,416,695 A 5/1995 5,416,695 A 5/1995	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Welch et al. Welch et al. Linwood et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco	5,933,488 A 5,936,539 A 5,942,986 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 6,014,633 A 6,057,782 A 6,057,782 A 6,067,019 A 6,076,166 A 6,078,261 A 6,085,493 A 6,085,493 A 6,083,403 A 6,083,403 A 6,133,837 A 6,147,592 A 6,147,592 A 6,147,592 A 6,147,592 A 6,147,592 A 6,147,592 A 6,147,692 B 6,241,668 B 6,241,668 B 6,259,355 B1	8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 11/1999 1/2000 5/2000 6/2000 7/2000 7/2000 7/2000 8/2000 10/2000 11/2000 2/2001 3/2001 6/2001 7/2001	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Demsev et al. Moshfeghi et al. Desbusk et al. Desbusk et al. Dempsey et al. Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,095 A 3/1991 5,096,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,153,584 A 10/1992 5,291,399 A 3/1994 5,319,363 A * 6/1994 5,319,363 A * 6/1994 5,357,254 A 10/1994 5,375,604 A 12/1994 5,396,224 A 3/1995 5,396,224 A 3/1995 5,434,775 A 7/1995 5,446,678 A 8/1995	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Welch et al. Linwood et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Selvel et al. Linwood State al. Stutman et al. Sims et al. Saltzstein et al.	5,933,488 A 5,936,539 A 5,942,659 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 6,014,633 A 6,057,758 A 6,057,758 A 6,057,782 A 6,067,019 A 6,078,261 A 6,078,261 A 6,093,146 A 6,093,146 A 6,093,308 A 6,133,837 A 6,133,837 A 6,134,17 B1 6,208,250 B1 6,241,668 B1 6,259,355 B1 6,259,355 B1 6,259,355 B1 6,264,614 B1	8/1999 8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 11/2000 5/2000 5/2000 6/2000 6/2000 7/2000 7/2000 7/2000 10/2000 11/2000 11/2000 2/2001 3/2001 6/2001 7/2001	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,993 A 3/1991 5,006,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,124,991 A 6/1992 5,125,03,93 A 8/1992 5,135,584 A 10/1992 5,291,399 A 3/1994 5,319,363 A * 6/1994 5,319,363 A * 6/1994 5,319,363 A * 6/1994 5,375,604 A 12/1994 5,375,604 A 12/1994 5,396,227 A 3/1995 5,434,775 A 7/1995 5,434,775 A 7/1995 5,446,678 A 8/1995 5,455,560 A 10/1995	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Welch et al	5,933,488 A 5,936,539 A 5,942,659 A 5,944,659 A 5,963,137 A 5,974,389 A 5,995,937 A 6,014,633 A 6,057,758 A 6,057,758 A 6,057,752 A 6,076,166 A 6,078,261 A 6,085,493 A 6,088,362 A 6,093,146 A 6,093,146 A 6,093,146 A 6,133,837 A 6,147,592 A 6,134,17 BI 6,254,668 BI 6,259,355 BI 6,244,668 BI 6,259,355 BI 6,244,664 BI 6,264,614 BI 6,264,614 BI 6,269,183 BI	8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 11/1999 11/2000 5/2000 6/2000 6/2000 7/2000 7/2000 7/2000 7/2000 10/2000 11/2000 11/2000 2/2001 3/2001 6/2001 7/2001 1/2001 1/2001 1/2001 1/2001 1/2001 1/2001 1/2001 1/2001 1/2001 1/2001	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko
4,990,892 A 2/1991 4,998,095 A 3/1991 5,096,830 A 4/1991 5,027,314 A 6/1991 5,062,151 A 10/1991 5,086,290 A 2/1992 5,103,108 A 4/1992 5,124,991 A 6/1992 5,137,033 A 8/1992 5,153,584 A 10/1992 5,291,399 A 3/1994 5,319,363 A * 6/1994 5,319,363 A * 6/1994 5,357,254 A 10/1994 5,375,604 A 12/1994 5,396,224 A 3/1995 5,396,224 A 3/1995 5,434,775 A 7/1995 5,446,678 A 8/1995	Shipley Guest et al. Shields Potthast et al. Merritt Linwood et al. Koenig et al. Shipley Kaiser Murray et al. Crimmins Allen Norton Engira Carroll et al. Chaco Russek Welch et al	5,933,488 A 5,936,539 A 5,942,659 A 5,944,659 A 5,963,137 A 5,974,389 A 5,991,728 A 6,014,633 A 6,057,758 A 6,057,758 A 6,057,782 A 6,067,019 A 6,078,261 A 6,078,261 A 6,093,146 A 6,093,146 A 6,093,308 A 6,133,837 A 6,133,837 A 6,134,17 B1 6,208,250 B1 6,241,668 B1 6,259,355 B1 6,259,355 B1 6,259,355 B1 6,264,614 B1	8/1999 8/1999 8/1999 10/1999 10/1999 11/1999 11/1999 11/2000 5/2000 6/2000 6/2000 7/2000 7/2000 7/2000 7/2000 10/2000 11/2000 11/2000 2/2001 3/2001 6/2001 7/2001 1/2001 1/2001 1/2001 1/2001 1/2001 1/2001 1/2001 1/2001 1/2001 1/2001	Marcus et al. Fuchs Shabot et al. Flach et al. Waters, Sr. Clark et al. DeBusk et al. DeBusk et al. DeBusk et al. Dempsey et al. Koenig Scott Moshfeghi et al. Davsko

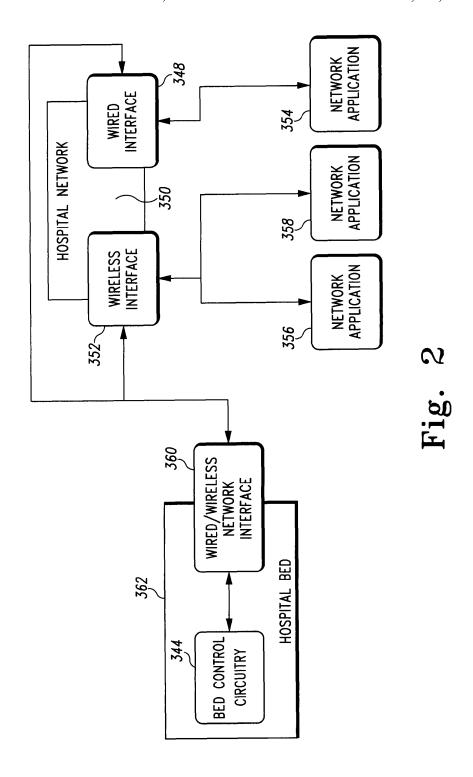


6,302,844 B1	10/2001	Walker et al.	6,731,989	B2	5/2004	Engleson et al.
6,314,556 B1	11/2001	DeBusk et al.	6,740,033	B1	5/2004	Olejniczak et al.
6,320,510 B2	11/2001	Menkedick et al.	6,749,566	B2	6/2004	Russ
6,344,794 B1	2/2002	Ulrich et al.	6,751,630	В1	6/2004	Franks et al.
6,348,777 B1	2/2002	Brown et al.	6,754,545	B2	6/2004	Haeuser et al.
6,362,725 B1	3/2002	Ulrich et al.	6,754,883	B2	6/2004	DeBusk et al.
6,364,834 B1	4/2002	Reuss et al.	6,759,959	B2	7/2004	Wildman
6,398,727 B1	6/2002	Bui et al.	6,763,541	B2	7/2004	Mahoney et al.
6,406,426 B1	6/2002	Reuss et al.	6,771,172	В1	8/2004	Robinson et al.
6,407,335 B1	6/2002	Franklin-Lees et al.	6,773,396	B2	8/2004	Flach et al.
6,412,980 B1	7/2002	Lounsberry et al.	6,778,225	B2	8/2004	David
6,416,471 B1	7/2002	Kumar et al.	6,781,517	B2	8/2004	Moster et al.
6,421,649 B1	7/2002	Rattner	6,784,797	B2	8/2004	Smith et al.
6,439,769 B1	8/2002	Polkus et al.	6,791,460	B2	9/2004	Dixon et al.
6,441,742 B1	8/2002	Lovely et al.	6,792,396	B2	9/2004	Inda et al.
6,442,290 B1	8/2002	Ellis et al.	6,801,227	B2	10/2004	Bocionek et al.
6,445,299 B1	9/2002	Rojas, Jr.	6,807,543	B2	10/2004	Muthya
6,450,956 B1	9/2002	Rappaport et al.	6,825,763	B2	11/2004	Ulrich et al.
6,462,656 B2	10/2002	Ulrich et al.	6,826,578	B2	11/2004	Brackett et al.
6,486,792 B1	11/2002	Moster et al.	6,828,992	В1	12/2004	Freeman et al.
6,493,568 B1	12/2002	Bell et al.	6,829,796	B2	12/2004	Salvatini et al.
6,494,831 B1	12/2002	Koritzinsky	6,830,549	B2	12/2004	Bui et al.
6,510,344 B1	1/2003	Halpern	6,832,199	B1	12/2004	Kucek et al.
6,516,324 B1	2/2003	Jones et al.	6,840,117	B2	1/2005	Hubbard, Jr.
6,526,310 B1	2/2003	Carter et al.	6,847,814	В1	1/2005	Vogeleisen
6,529,164 B1	3/2003	Carter	6,868,256			Dooley et al.
6,533,453 B1	3/2003	Heidsieck et al.	6,871,211	B2	3/2005	Labounty et al.
6,535,576 B2	3/2003	Vafi et al.	6,873,884	B2	3/2005	Brackett et al.
6,539,393 B1	3/2003	Kabala	6,876,985	B2	4/2005	Kawanaka
6,544,173 B2	4/2003	West et al.	6,885,288	B2	4/2005	Pincus
6,544,174 B2	4/2003	West et al.	6,891,909	B2	5/2005	Hurley et al.
6,551,243 B2	4/2003	Bocionek et al.	6,904,161	В1	6/2005	Becker et al.
6,553,106 B1	4/2003	Gould et al.	6,909,995	B2	6/2005	Shiraishi
6,554,174 B1	4/2003	Aceves	6,912,549		6/2005	Rotter et al.
6,556,630 B1	4/2003	Brinsfield et al.	6,915,170	B2	7/2005	Engleson et al.
6,560,274 B1		Leitgeb et al.	6,925,367			Fontius
6,560,274 B1 6,572,556 B2	5/2003	Leitgeb et al.	, ,	B2	8/2005	Fontius
6,572,556 B2	5/2003 6/2003		6,925,367 6,930,878	B2 B2	8/2005 8/2005	Fontius Brackett et al.
	5/2003 6/2003 6/2003	Leitgeb et al. Stoycos et al.	6,925,367	B2 B2 B2	8/2005 8/2005 6/2006	Fontius
6,572,556 B2 6,575,901 B2	5/2003 6/2003 6/2003 6/2003	Leitgeb et al. Stoycos et al. Stoycos et al.	6,925,367 6,930,878 7,068,143	B2 B2 B2 B2 *	8/2005 8/2005 6/2006 8/2006	Fontius Brackett et al. Doering et al.
6,572,556 B2 6,575,901 B2 6,581,204 B2	5/2003 6/2003 6/2003 6/2003 6/2003	Leitgeb et al. Stoycos et al. Stoycos et al. DeBusk et al.	6,925,367 6,930,878 7,068,143 7,092,376	B2 B2 B2 B2 * B2 *	8/2005 8/2005 6/2006 8/2006	Fontius Brackett et al. Doering et al. Schuman
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6,572,556 B2 6,575,901 B2 6,581,204 B2 6,584,182 B2 6,584,454 B1 6,585,645 B2 6,589,170 B1 6,593,528 B2 6,594,146 B2 6,600,421 B2 6,600,421 B2 6,600,421 B2 6,603,494 B1 6,602,115 B1 6,616,606 B1 6,622,088 B2 6,640,246 B1 6,643,238 B2 6,650,346 B1 6,655,385 B2 6,665,820 B1 6,665,820 B1 6,665,820 B1 6,6671,547 B2 6,671,547 B2 6,671,547 B2 6,685,633 B1 6,685,633 B1 6,685,633 B2 6,685,635 B1	5/2003 6/2003 6/2003 6/2003 6/2003 7/2003 7/2003 7/2003 7/2003 8/2003 8/2003 9/2003 11/2003 11/2003 12/2003 12/2003 12/2003 12/2003 12/2004 2/2004 2/2004	Leitgeb et al. Stoycos et al. Stoycos et al. DeBusk et al. Brodnick Hummel, Jr. et al. Hutchinson Flach et al. Franklin-Lees et al. Franklin-Lees et al. Stoycos et al. Freeman Banks et al. Mehring et al. Petersen et al. Hood Gary, Jr. et al. Nakajima Jaeger et al. Carter et al. Rogers et al. Frowein et al. Lyster et al. Lyster et al. Engelson et al. Albert et al. Buil et al. Lyster et al. Engelson et al. Albert et al. Buil et al. Miesbauer et al.	6,925,367 6,930,878 7,068,143 7,092,376 7,319,386 2001/0050610 2001/0051765 2002/0014951 2002/0044043 2002/0067273 2002/0070867 2002/0080037 2002/013674 2002/0151990 2002/0173991 2002/0196141 2003/0030569 2003/0030569 2003/0146835 2003/0146835 2003/0146835 2003/01674222 2003/0146835 2003/01676798 2003/0206116 2004/0183681	B2 B2 B2 * B2 * A1 A1 A1 A1 A1 A1 A1 A1 A1 A1 A1 A1 A1 A	8/2005 8/2005 6/2006 6/2006 1/2008 12/2001 12/2001 2/2002 4/2002 6/2002 6/2002 6/2002 10/2002 11/2002 11/2002 12/2003 3/2003 3/2003 8/2003 8/2003 8/2003 9/2003 11/2003	Fontius Brackett et al. Doering et al. Schuman
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6,572,556 B2 6,575,901 B2 6,581,204 B2 6,584,182 B2 6,584,454 B1 6,585,645 B2 6,589,170 B1 6,593,528 B2 6,594,146 B2 6,600,421 B2 6,603,494 B1 6,605,20,88 B2 6,640,246 B1 6,643,238 B2 6,650,346 B1 6,655,947 B1 6,665,385 B2 6,665,385 B2 6,665,385 B2 6,665,385 B2 6,6671,547 B2 6,671,547 B1 6,685,633 B2 6,689,091 B2 6,694,369 B1 6,694,369 B1 6,694,509 B1 6,694,509 B1	5/2003 6/2003 6/2003 6/2003 6/2003 7/2003 7/2003 7/2003 7/2003 8/2003 8/2003 8/2003 10/2003 11/2003 11/2003 12/2003 12/2003 12/2003 12/2003 12/2004 2/2004 2/2004 2/2004 2/2004	Leitgeb et al. Stoycos et al. Stoycos et al. DeBusk et al. Brodnick Hummel, Jr. et al. Hutchinson Flach et al. Franklin-Lees et al. Frangesch et al. Stoycos et al. Freeman Banks et al. Mehring et al. Petersen et al. Hood Gary, Jr. et al. Nakajima Jaeger et al. Carter et al. Rogers et al. Frowein et al. Joliat et al. Lyster et al. Lyster et al. Engelson et al. Albert et al. Bui et al. Miesbauer et al. Stoyal et al. Kuth	6,925,367 6,930,878 7,068,143 7,092,376 7,319,386 2001/0050610 2001/0051765 2002/0014951 2002/0044043 2002/0067273 2002/008037 2002/013674 2002/0151990 2002/0151990 2002/0151990 2002/0186136 2002/0196141 2003/00328449 2003/0032849 2003/0032849 2003/0032849 2003/0032849 2003/00303030303 2003/014958 2003/0146835 2003/0146835 2003/0149598 2003/0176798 2003/026116 2004/0183681 2004/0183684 2004/0183688	B2 B2 B2 B2 * B2 * B2 * A1 A1 A1 A1 A1 A1 A1 A1 A1 A1 A1 A1 A1 A	8/2005 8/2005 6/2006 6/2006 1/2008 12/2001 12/2001 12/2002 4/2002 4/2002 6/2002 6/2002 6/2002 10/2002 11/2002 11/2002 12/2003 2/2003 2/2003 2/2003 3/2003 8/2003 8/2003 8/2003 8/2003 8/2003 8/2003 8/2003 8/2003 9/2004 9/2004 9/2004	Fontius Brackett et al. Doering et al. Schuman
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6,572,556 B2 6,575,901 B2 6,581,204 B2 6,584,182 B2 6,584,182 B2 6,584,645 B2 6,589,170 B1 6,593,528 B2 6,594,146 B2 6,600,421 B2 6,600,421 B2 6,603,494 B1 6,609,115 B1 6,616,606 B1 6,622,088 B2 6,640,246 B1 6,643,238 B2 6,650,346 B1 6,659,947 B1 6,665,385 B2 6,665,820 B1 6,665,820 B1 6,665,385 B2 6,665,820 B1 6,665,385 B2 6,665,820 B1 6,665,385 B2 6,665,820 B1 6,669,30 B1 6,6671,547 B2 6,671,547 B2 6,671,547 B2 6,671,548 B1 6,694,509 B1 6,694,509 B1 6,694,509 B1 6,694,765 B2 6,707,476 B1 6,714,913 B2	5/2003 6/2003 6/2003 6/2003 6/2003 7/2003 7/2003 7/2003 7/2003 8/2003 8/2003 9/2003 11/2003 11/2003 12/2003 12/2003 12/2003 12/2003 12/2004 2/2004 2/2004 2/2004 3/2004 3/2004	Leitgeb et al. Stoycos et al. Stoycos et al. DeBusk et al. Brodnick Hummel, Jr. et al. Hutchinson Flach et al. Franklin-Lees et al. Franklin-Lees et al. Freeman Banks et al. Mehring et al. Petersen et al. Hood Gary, Jr. et al. Nakajima Jaeger et al. Carter et al. Rogers et al. Frowein et al. Lyster et al. Lyster et al. Albert et al. Bui et al. Albert et al. Bui et al. Miesbauer et al. Stoyal et al. Kuth Hochstedler Brandt et al.	6,925,367 6,930,878 7,068,143 7,092,376 7,319,386 2001/0050610 2001/0051765 2002/0014951 2002/0044043 2002/0067273 2002/0067273 2002/008037 2002/013674 2002/0151990 2002/0151990 2002/015991 2002/0196141 2003/0030569 2003/0030569 2003/0030569 2003/0146835 2003/0146835 2003/0146835 2003/01676798 2003/01676798 2004/0183681 2004/0183684 2004/0183688 2004/0183688 2004/0183688	B2 B2 B2 * B2 * A1 A1 A1 A1 A1 A1 A1 A1 A1 A1 A1 A1 A1 A	8/2005 8/2005 6/2006 6/2006 1/2008 12/2001 12/2001 12/2002 4/2002 4/2002 6/2002 6/2002 8/2002 10/2002 11/2002 12/2002 12/2003 3/2003 3/2003 8/2003 8/2003 8/2003 11/2003 11/2003 8/2003 11/2003 11/2003 11/2003 11/2003 11/2003 11/2003 11/2003 11/2003 11/2003 11/2003 11/2003 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004 11/2004	Fontius Brackett et al. Doering et al. Schuman
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