



US00D890784S

(12) **United States Design Patent**
Shelton, IV et al.

(10) **Patent No.:** **US D890,784 S**

(45) **Date of Patent:** **** Jul. 21, 2020**

(54) **DISPLAY PANEL WITH CHANGEABLE GRAPHICAL USER INTERFACE**

FOREIGN PATENT DOCUMENTS

(71) Applicant: **Ethicon LLC**, Guaynabo, PR (US)

AU 2012200594 A1 2/2012
AU 2011218702 B2 6/2013

(Continued)

(72) Inventors: **Frederick E. Shelton, IV**, Hillsboro, OH (US); **Jason L. Harris**, Lebanon, OH (US); **Douglas E. Withers**, Cincinnati, OH (US); **Sarah A. Worthington**, Angola, IN (US); **Chester O. Baxter, III**, Loveland, OH (US)

OTHER PUBLICATIONS

Warning Sign Beveled Buttons, by Peter, flarestock.com [online], published on or before Jan. 1, 2017, [retrieved on Jun. 4, 2019], retrieved from the Internet [URL: <https://www.flarestock.com/stock-images/warning-sign-beveled-buttons/70257>] (Year: 2017).*

(Continued)

(73) Assignee: **Ethicon LLC**, Guaynabo, PR (US)

(**) Term: **15 Years**

Primary Examiner — Cathron C Brooks

Assistant Examiner — Ian F Whitmore

(21) Appl. No.: **29/608,246**

(22) Filed: **Jun. 20, 2017**

(51) **LOC (12) Cl.** **14-04**

(52) **U.S. Cl.** **D14/486; D14/491**

(58) **Field of Classification Search**

USPC D14/485–495; D20/10, 11, 22–33, 39, D20/40; D5/20, 26, 30, 40, 63–65
CPC G06F 3/048–3/04897; G06F 3/147; G06F 19/3456; A61B 2017/00017; A61B 17/04; A61B 17/32; A61B 17/1626; A61B 34/00; A61B 34/25; A61B 34/70; A61M 5/003

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

66,052 A 6/1867 Smith
662,587 A 11/1900 Blake
670,748 A 3/1901 Weddeler
719,487 A 2/1903 Minor
804,229 A 11/1905 Hutchinson
951,393 A 3/1910 Hahn

(Continued)

(57) **CLAIM**

The ornamental design for a display panel with changeable graphical user interface, as shown and described.

DESCRIPTION

FIG. 1 is a front view of a portion of a display panel with changeable graphical user interface showing a first image in a sequence according to our new design;

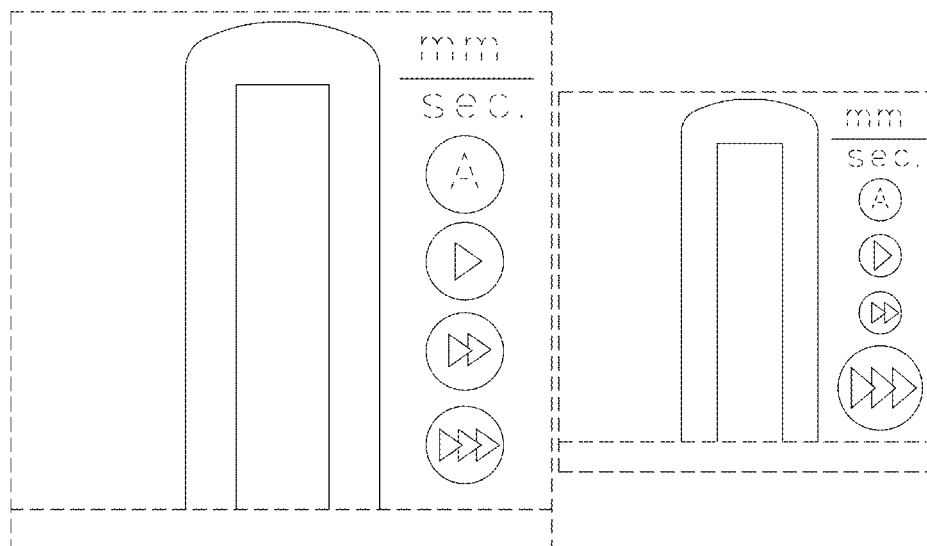
FIG. 2 is a front view of a second image thereof;

FIG. 3 is a front view of a third image thereof; and,

FIG. 4 is a front view of a fourth image thereof.

In all figures, the outermost broken-line square illustrates the perimeter of a portion of a display panel and defines the bounds of the claimed design. The remaining broken lines illustrate portions of a graphical user interface. The broken lines form no part of the claimed design. Further, the appearance of the display panel with changeable graphical user interface sequentially transitions between the images shown in FIGS. 1-4. The process or period in which one image transitions to another forms no part of the claimed design.

1 Claim, 3 Drawing Sheets



US D890,784 S

Page 2

(56)

References Cited

U.S. PATENT DOCUMENTS

1,188,721 A	6/1916	Bittner	3,662,939 A	5/1972	Bryan
1,306,107 A	6/1919	Elliott	3,688,966 A	9/1972	Perkins et al.
1,314,601 A	9/1919	McCaskey	3,695,646 A	10/1972	Mommssen
1,677,337 A	7/1928	Grove	3,709,221 A	1/1973	Riely
1,794,907 A	3/1931	Kelly	3,717,294 A	2/1973	Green
1,849,427 A	3/1932	Hook	3,726,755 A	4/1973	Shannon
1,944,116 A	1/1934	Stratman	3,727,904 A	4/1973	Gabbey
1,954,048 A	4/1934	Jeffrey et al.	3,734,207 A	5/1973	Fishbein
2,037,727 A	4/1936	La Chapelle	3,740,994 A	6/1973	De Carlo, Jr.
2,132,295 A	10/1938	Hawkins	3,744,495 A	7/1973	Johnson
2,161,632 A	6/1939	Nattenheimer	3,746,002 A	7/1973	Haller
D120,434 S	5/1940	Gold	3,747,603 A	7/1973	Adler
2,211,117 A	8/1940	Hess	3,747,692 A	7/1973	Davidson
2,214,870 A	9/1940	West	3,751,902 A	8/1973	Kingsbury et al.
2,224,882 A	12/1940	Peck	3,752,161 A	8/1973	Bent
2,318,379 A	5/1943	Davis et al.	3,799,151 A	3/1974	Fukaumi et al.
2,329,440 A	9/1943	La Place	3,808,452 A	4/1974	Hutchinson
2,377,581 A	6/1945	Shaffrey	3,815,476 A	6/1974	Green et al.
2,406,389 A	8/1946	Royal Lee	3,819,100 A	6/1974	Noiles et al.
2,441,096 A	5/1948	Happe	3,821,919 A	7/1974	Knohl
2,448,741 A	9/1948	Scott et al.	3,836,171 A	9/1974	Hayashi et al.
2,450,527 A	10/1948	Smith	3,837,555 A	9/1974	Green
2,507,872 A	5/1950	Unsinger	3,841,474 A	10/1974	Maier
2,526,902 A	10/1950	Rublee	3,851,196 A	11/1974	Hinds
2,527,256 A	10/1950	Jackson	3,863,639 A	2/1975	Kleaveland
2,578,686 A	12/1951	Fish	3,883,624 A	5/1975	McKenzie et al.
2,638,901 A	5/1953	Sugarbaker	3,885,491 A	5/1975	Curtis
2,674,149 A	4/1954	Benson	3,892,228 A	7/1975	Mitsui
2,701,489 A	2/1955	Osborn	3,894,174 A	7/1975	Cartun
2,711,461 A	6/1955	Happe	3,902,247 A	9/1975	Fleer et al.
2,742,955 A	4/1956	Dominguez	3,940,844 A	3/1976	Colby et al.
2,804,848 A	9/1957	O'Farrell et al.	3,944,163 A	3/1976	Hayashi et al.
2,808,482 A	10/1957	Zanichkowsky et al.	3,950,686 A	4/1976	Randall
2,853,074 A	9/1958	Olson	3,952,747 A	4/1976	Kimmell, Jr.
2,887,004 A	5/1959	Stewart	3,955,581 A	5/1976	Spasiano et al.
2,957,353 A	10/1960	Lewis	3,959,879 A	6/1976	Sellers
2,959,974 A	11/1960	Emrick	RE28,932 E	8/1976	Noiles et al.
3,032,769 A	5/1962	Palmer	3,972,734 A	8/1976	King
3,060,972 A	10/1962	Sheldon	3,981,051 A	9/1976	Brumlik
3,075,062 A	1/1963	Iaccarino	4,025,216 A	5/1977	Hives
3,078,465 A	2/1963	Bobrov	4,027,746 A	6/1977	Kine
3,079,606 A	3/1963	Bobrov et al.	4,034,143 A	7/1977	Sweet
3,080,564 A	3/1963	Strekopitov et al.	4,038,987 A	8/1977	Komiya
3,166,072 A	1/1965	Sullivan, Jr.	4,054,108 A	10/1977	Gill
3,180,236 A	4/1965	Beckett	4,060,089 A	11/1977	Noiles
3,196,869 A	7/1965	Scholl	4,066,133 A	1/1978	Voss
3,204,731 A	9/1965	Bent et al.	4,085,337 A	4/1978	Moeller
3,266,494 A	8/1966	Brownrigg et al.	4,100,820 A	7/1978	Evelt
3,269,630 A	8/1966	Fleischer	4,106,446 A	8/1978	Yamada et al.
3,269,631 A	8/1966	Takaro	4,106,620 A	8/1978	Brimmer et al.
3,275,211 A	9/1966	Hirsch et al.	4,108,211 A	8/1978	Tanaka
3,317,103 A	5/1967	Cullen et al.	4,111,206 A	9/1978	Vishnevsky et al.
3,317,105 A	5/1967	Astafjev et al.	4,127,227 A	11/1978	Green
3,357,296 A	12/1967	Lefever	4,129,059 A	12/1978	Van Eck
3,359,978 A	12/1967	Smith, Jr.	4,132,146 A	1/1979	Uhlrig
3,377,893 A	4/1968	Shorb	4,135,517 A	1/1979	Reale
3,480,193 A	11/1969	Ralston	4,154,122 A	5/1979	Severin
3,490,675 A	1/1970	Green et al.	4,169,990 A	10/1979	Lerdman
3,494,533 A	2/1970	Green et al.	4,180,285 A	12/1979	Reneau
3,499,591 A	3/1970	Green	4,185,701 A	1/1980	Boys
3,503,396 A	3/1970	Pierie et al.	4,190,042 A	2/1980	Sinnreich
3,509,629 A	5/1970	Kidokoro	4,198,734 A	4/1980	Brumlik
3,551,987 A	1/1971	Wilkinson	4,198,982 A	4/1980	Fortner et al.
3,568,675 A	3/1971	Harvey	4,207,898 A	6/1980	Becht
3,572,159 A	3/1971	Tschanz	4,213,562 A	7/1980	Garrett et al.
3,583,393 A	6/1971	Takahashi	4,226,242 A	10/1980	Jarvik
3,589,589 A	6/1971	Akopov	4,239,431 A	12/1980	Davini
3,598,943 A	8/1971	Barrett	4,241,861 A	12/1980	Fleischer
3,608,549 A	9/1971	Merrill	4,244,372 A	1/1981	Kapitanov et al.
3,618,842 A	11/1971	Bryan	4,250,436 A	2/1981	Weissman
3,638,652 A	2/1972	Kelley	4,261,244 A	4/1981	Becht et al.
3,640,317 A	2/1972	Panfil	4,272,002 A	6/1981	Moshofsky
3,643,851 A	2/1972	Green et al.	4,272,662 A	6/1981	Simpson
3,650,453 A	3/1972	Smith, Jr.	4,274,304 A	6/1981	Curtiss
3,661,666 A	5/1972	Foster et al.	4,274,398 A	6/1981	Scott, Jr.
			4,275,813 A	6/1981	Noiles
			4,278,091 A	7/1981	Borzone
			4,289,131 A	9/1981	Mueller
			4,289,133 A	9/1981	Rothfuss

(56)

References Cited

U.S. PATENT DOCUMENTS

4,290,542 A	9/1981	Fedotov et al.	4,505,272 A	3/1985	Utyamyshev et al.
D261,356 S	10/1981	Robinson	4,505,273 A	3/1985	Braun et al.
4,293,604 A	10/1981	Campbell	4,505,414 A	3/1985	Filipi
4,296,654 A	10/1981	Mercer	4,506,671 A	3/1985	Green
4,296,881 A	10/1981	Lee	4,512,038 A	4/1985	Alexander et al.
4,304,236 A	12/1981	Conta et al.	4,520,817 A	6/1985	Green
4,305,539 A	12/1981	Korolkov et al.	4,522,327 A	6/1985	Korthoff et al.
4,312,363 A	1/1982	Rothfuss et al.	4,526,174 A	7/1985	Froehlich
4,312,685 A	1/1982	Riedl	4,527,724 A	7/1985	Chow et al.
4,317,451 A	3/1982	Cerwin et al.	4,530,357 A	7/1985	Pawloski et al.
4,319,576 A	3/1982	Rothfuss	4,530,453 A	7/1985	Green
4,321,002 A	3/1982	Froehlich	4,531,522 A	7/1985	Bedi et al.
4,321,746 A	3/1982	Grinage	4,532,927 A	8/1985	Miksza, Jr.
4,328,839 A	5/1982	Lyons et al.	4,540,202 A	9/1985	Amphoux et al.
4,331,277 A	5/1982	Green	4,548,202 A	10/1985	Duncan
4,340,331 A	7/1982	Savino	4,556,058 A	12/1985	Green
4,347,450 A	8/1982	Colligan	4,560,915 A	12/1985	Soultanian
4,348,603 A	9/1982	Huber	4,565,109 A	1/1986	Tsay
4,349,028 A	9/1982	Green	4,565,189 A	1/1986	Mabuchi
4,350,151 A	9/1982	Scott	4,566,620 A	1/1986	Green et al.
4,353,371 A	10/1982	Cosman	4,569,346 A	2/1986	Poirier
4,357,940 A	11/1982	Muller	4,569,469 A	2/1986	Mongeon et al.
4,361,057 A	11/1982	Kochera	4,571,213 A	2/1986	Ishimoto
4,366,544 A	12/1982	Shima et al.	4,573,468 A	3/1986	Conta et al.
4,369,013 A	1/1983	Abildgaard et al.	4,573,469 A	3/1986	Golden et al.
4,373,147 A	2/1983	Carlson, Jr.	4,573,622 A	3/1986	Green et al.
4,376,380 A	3/1983	Burgess	4,576,165 A	3/1986	Green et al.
4,379,457 A	4/1983	Gravener et al.	4,576,167 A	3/1986	Noiles
4,380,312 A	4/1983	Landrus	4,580,712 A	4/1986	Green
4,382,326 A	5/1983	Rabuse	4,585,153 A	4/1986	Failla et al.
4,383,634 A	5/1983	Green	4,586,501 A	5/1986	Claracq
4,393,728 A	7/1983	Larson et al.	4,586,502 A	5/1986	Bedi et al.
4,394,613 A	7/1983	Cole	4,589,416 A	5/1986	Green
4,396,139 A	8/1983	Hall et al.	4,589,582 A	5/1986	Bilotti
4,397,311 A	8/1983	Kanshin et al.	4,589,870 A	5/1986	Citrin et al.
4,402,445 A	9/1983	Green	4,591,085 A	5/1986	Di Giovanni
4,406,621 A	9/1983	Bailey	RE32,214 E	7/1986	Schramm
4,408,692 A	10/1983	Sigel et al.	4,597,753 A	7/1986	Turley
4,409,057 A	10/1983	Molenda et al.	4,600,037 A	7/1986	Hatten
4,415,112 A	11/1983	Green	4,604,786 A	8/1986	Howie, Jr.
4,416,276 A	11/1983	Newton et al.	4,605,001 A	8/1986	Rothfuss et al.
4,417,890 A	11/1983	Dennehey et al.	4,605,004 A	8/1986	Di Giovanni et al.
4,423,456 A	12/1983	Zaidenweber	4,606,343 A	8/1986	Conta et al.
4,428,376 A	1/1984	Mericle	4,607,636 A	8/1986	Kula et al.
4,429,695 A	2/1984	Green	4,607,638 A	8/1986	Crainich
4,430,997 A	2/1984	DiGiovanni et al.	4,608,981 A	9/1986	Rothfuss et al.
4,434,796 A	3/1984	Karapetian et al.	4,610,250 A	9/1986	Green
4,438,659 A	3/1984	Desplats	4,610,383 A	9/1986	Rothfuss et al.
4,442,964 A	4/1984	Becht	4,612,933 A	9/1986	Brinkerhoff et al.
4,448,194 A	5/1984	DiGiovanni et al.	D286,180 S	10/1986	Korthoff
4,451,743 A	5/1984	Suzuki et al.	D286,442 S	10/1986	Korthoff et al.
4,452,376 A	6/1984	Klieman et al.	4,617,893 A	10/1986	Donner et al.
4,454,887 A	6/1984	Kruger	4,617,914 A	10/1986	Ueda
4,461,305 A	7/1984	Cibley	4,619,262 A	10/1986	Taylor
4,467,805 A	8/1984	Fukuda	4,619,391 A	10/1986	Sharkany et al.
4,468,597 A	8/1984	Baumard et al.	D287,278 S	12/1986	Spreckelmeier
4,469,481 A	9/1984	Kobayashi	4,628,459 A	12/1986	Shinohara et al.
4,470,414 A	9/1984	Imagawa et al.	4,628,636 A	12/1986	Folger
4,471,780 A	9/1984	Menges et al.	4,629,107 A	12/1986	Fedotov et al.
4,471,781 A	9/1984	Di Giovanni et al.	4,632,290 A	12/1986	Green et al.
4,473,077 A	9/1984	Noiles et al.	4,633,861 A	1/1987	Chow et al.
4,475,679 A	10/1984	Fleury, Jr.	4,633,874 A	1/1987	Chow et al.
4,478,220 A	10/1984	Di Giovanni et al.	4,634,419 A	1/1987	Kreizman et al.
4,480,641 A	11/1984	Failla et al.	4,635,638 A	1/1987	Weintraub et al.
4,485,816 A	12/1984	Krumme	4,641,076 A	2/1987	Linden
4,485,817 A	12/1984	Swiggett	4,642,618 A	2/1987	Johnson et al.
4,486,928 A	12/1984	Tucker et al.	4,643,173 A	2/1987	Bell et al.
4,488,523 A	12/1984	Shichman	4,643,731 A	2/1987	Eckenhoff
4,489,875 A	12/1984	Crawford et al.	4,646,722 A	3/1987	Silverstein et al.
4,493,983 A	1/1985	Taggart	4,646,745 A	3/1987	Noiles
4,494,057 A	1/1985	Hotta	4,652,820 A	3/1987	Maresca
4,499,895 A	2/1985	Takayama	4,654,028 A	3/1987	Suma
4,500,024 A	2/1985	DiGiovanni et al.	4,655,222 A	4/1987	Florez et al.
D278,081 S	3/1985	Green	4,662,555 A	5/1987	Thornton
4,503,842 A	3/1985	Takayama	4,663,874 A	5/1987	Sano et al.
			4,664,305 A	5/1987	Blake, III et al.
			4,665,916 A	5/1987	Green
			4,667,674 A	5/1987	Korthoff et al.
			4,669,647 A	6/1987	Storace

US D890,784 S

Page 4

(56)

References Cited

U.S. PATENT DOCUMENTS

4,671,278 A	6/1987	Chin	4,880,015 A	11/1989	Nierman
4,671,280 A	6/1987	Dorband et al.	4,890,613 A	1/1990	Golden et al.
4,671,445 A	6/1987	Barker et al.	4,892,244 A	1/1990	Fox et al.
4,672,964 A	6/1987	Dee et al.	4,893,622 A	1/1990	Green et al.
4,675,944 A	6/1987	Wells	4,894,051 A	1/1990	Shiber
4,676,245 A	6/1987	Fukuda	4,896,584 A	1/1990	Stoll et al.
4,679,460 A	7/1987	Yoshigai	4,896,678 A	1/1990	Ogawa
4,679,719 A	7/1987	Kramer	4,900,303 A	2/1990	Lemelson
4,684,051 A	8/1987	Akopov et al.	4,903,697 A	2/1990	Resnick et al.
4,688,555 A	8/1987	Wardle	4,909,789 A	3/1990	Taguchi et al.
4,691,703 A	9/1987	Auth et al.	4,915,100 A	4/1990	Green
4,693,248 A	9/1987	Failla	4,919,679 A	4/1990	Averill et al.
4,698,579 A	10/1987	Richter et al.	4,921,479 A	5/1990	Grayzel
4,700,703 A	10/1987	Resnick et al.	4,925,082 A	5/1990	Kim
4,705,038 A	11/1987	Sjostrom et al.	4,928,699 A	5/1990	Sasai
4,708,141 A	11/1987	Inoue et al.	4,930,503 A	6/1990	Pruitt
4,709,120 A	11/1987	Pearson	4,930,674 A	6/1990	Barak
4,715,520 A	12/1987	Roehr, Jr. et al.	4,931,047 A	6/1990	Broadwin et al.
4,719,917 A	1/1988	Barrows et al.	4,931,737 A	6/1990	Hishiki
4,721,099 A	1/1988	Chikama	4,932,960 A	6/1990	Green et al.
4,724,840 A	2/1988	McVay et al.	4,933,800 A	6/1990	Yang
4,727,308 A	2/1988	Huljak et al.	4,933,843 A	6/1990	Scheller et al.
4,728,020 A	3/1988	Green et al.	D309,350 S	7/1990	Sutherland et al.
4,728,876 A	3/1988	Mongeon et al.	4,938,408 A	7/1990	Bedi et al.
4,729,260 A	3/1988	Dudden	4,941,623 A	7/1990	Pruitt
4,730,726 A	3/1988	Holzwarth	4,943,182 A	7/1990	Hoblingre
4,741,336 A	5/1988	Failla et al.	4,944,443 A	7/1990	Odds et al.
4,743,214 A	5/1988	Tai-Cheng	4,946,067 A	8/1990	Kelsall
4,744,363 A	5/1988	Hasson	4,948,327 A	8/1990	Crupi, Jr.
4,747,820 A	5/1988	Hornlein et al.	4,949,707 A	8/1990	LeVahn et al.
4,750,902 A	6/1988	Wuchinich et al.	4,951,860 A	8/1990	Peters et al.
4,752,024 A	6/1988	Green et al.	4,951,861 A	8/1990	Schulze et al.
4,754,909 A	7/1988	Barker et al.	4,955,959 A	9/1990	Tompkins et al.
4,761,326 A	8/1988	Barnes et al.	4,957,212 A	9/1990	Duck et al.
4,763,669 A	8/1988	Jaeger	4,962,877 A	10/1990	Hervas
4,767,044 A	8/1988	Green	4,964,559 A	10/1990	Deniega et al.
D297,764 S	9/1988	Hunt et al.	4,964,863 A	10/1990	Kanshin et al.
4,773,420 A	9/1988	Green	4,965,709 A	10/1990	Ngo
4,777,780 A	10/1988	Holzwarth	4,973,274 A	11/1990	Hirukawa
4,781,186 A	11/1988	Simpson et al.	4,973,302 A	11/1990	Armour et al.
4,784,137 A	11/1988	Kulik et al.	4,978,049 A	12/1990	Green
4,787,387 A	11/1988	Burbank, III et al.	4,978,333 A	12/1990	Broadwin et al.
4,788,485 A	11/1988	Kawagishi et al.	4,979,952 A	12/1990	Kubota et al.
D298,967 S	12/1988	Hunt	4,984,564 A	1/1991	Yuen
4,790,225 A	12/1988	Moody et al.	4,986,808 A	1/1991	Broadwin et al.
4,790,314 A	12/1988	Weaver	4,987,049 A	1/1991	Komamura et al.
4,805,617 A	2/1989	Bedi et al.	4,988,334 A	1/1991	Hornlein et al.
4,805,823 A	2/1989	Rothfuss	4,995,877 A	2/1991	Ams et al.
4,807,628 A	2/1989	Peters et al.	4,995,959 A	2/1991	Metzner
4,809,695 A	3/1989	Gwathmey et al.	4,996,975 A	3/1991	Nakamura
4,815,460 A	3/1989	Porat et al.	5,002,543 A	3/1991	Bradshaw et al.
4,817,643 A	4/1989	Olson	5,002,553 A	3/1991	Shiber
4,817,847 A	4/1989	Redtenbacher et al.	5,005,754 A	4/1991	Van Overloop
4,819,853 A	4/1989	Green	5,009,661 A	4/1991	Michelson
4,821,939 A	4/1989	Green	5,012,411 A	4/1991	Policastro et al.
4,827,911 A	5/1989	Broadwin et al.	5,014,898 A	5/1991	Heidrich
4,828,542 A	5/1989	Hermann	5,014,899 A	5/1991	Presty et al.
4,828,944 A	5/1989	Yabe et al.	5,015,227 A	5/1991	Broadwin et al.
4,830,855 A	5/1989	Stewart	5,018,515 A	5/1991	Gilman
4,832,158 A	5/1989	Farrar et al.	5,018,657 A	5/1991	Pedlick et al.
4,833,937 A	5/1989	Nagano	5,024,652 A	6/1991	Dumenek et al.
4,834,720 A	5/1989	Blinkhorn	5,024,671 A	6/1991	Tu et al.
4,838,859 A	6/1989	Strassmann	5,025,559 A	6/1991	McCullough
4,844,068 A	7/1989	Arata et al.	5,027,834 A	7/1991	Pruitt
4,848,637 A	7/1989	Pruitt	5,030,226 A	7/1991	Green et al.
4,856,078 A	8/1989	Konopka	5,031,814 A	7/1991	Tompkins et al.
4,860,644 A	8/1989	Kohl et al.	5,035,040 A	7/1991	Kerrigan et al.
4,862,891 A	9/1989	Smith	5,038,109 A	8/1991	Goble et al.
4,863,423 A	9/1989	Wallace	5,038,247 A	8/1991	Kelley et al.
4,865,030 A	9/1989	Polyak	5,040,715 A	8/1991	Green et al.
4,868,530 A	9/1989	Ahs	5,042,707 A	8/1991	Taheri
4,869,414 A	9/1989	Green et al.	5,061,269 A	10/1991	Muller
4,869,415 A	9/1989	Fox	5,062,491 A	11/1991	Takeshima et al.
4,873,977 A	10/1989	Avant et al.	5,062,563 A	11/1991	Green et al.
4,875,486 A	10/1989	Rapoport et al.	5,065,929 A	11/1991	Schulze et al.
			5,071,052 A	12/1991	Rodak et al.
			5,071,430 A	12/1991	de Salis et al.
			5,074,454 A	12/1991	Peters
			5,077,506 A	12/1991	Krause

US D890,784 S

Page 5

(56)

References Cited

U.S. PATENT DOCUMENTS

5,079,006 A	1/1992	Urquhart	5,221,281 A	6/1993	Klicek
5,080,556 A	1/1992	Carreno	5,222,945 A	6/1993	Basnight
5,083,695 A	1/1992	Foslien et al.	5,222,963 A	6/1993	Brinkerhoff et al.
5,084,057 A	1/1992	Green et al.	5,222,975 A	6/1993	Crainich
5,088,979 A	2/1992	Filipi et al.	5,222,976 A	6/1993	Yoon
5,088,997 A	2/1992	Delahuerge et al.	5,223,675 A	6/1993	Taft
5,089,606 A	2/1992	Cole et al.	D338,729 S	8/1993	Sprecklemeier et al.
5,094,247 A	3/1992	Hernandez et al.	5,234,447 A	8/1993	Kaster et al.
5,098,004 A	3/1992	Kerrigan	5,236,269 A	8/1993	Handy
5,098,360 A	3/1992	Hirota	5,236,424 A	8/1993	Imran
5,100,042 A	3/1992	Gravener et al.	5,236,440 A	8/1993	Hlavacek
5,100,420 A	3/1992	Green et al.	5,239,981 A	8/1993	Anapliotis
5,104,025 A	4/1992	Main et al.	5,240,163 A	8/1993	Stein et al.
5,104,397 A	4/1992	Vasconcelos et al.	5,242,456 A	9/1993	Nash et al.
5,104,400 A	4/1992	Berguer et al.	5,242,457 A	9/1993	Akopov et al.
5,106,008 A	4/1992	Tompkins et al.	5,244,462 A	9/1993	Delahuerge et al.
5,108,368 A	4/1992	Hammerslag et al.	5,246,156 A	9/1993	Rothfuss et al.
5,109,722 A	5/1992	Hufnagle et al.	5,246,443 A	9/1993	Mai
5,111,987 A	5/1992	Moeinzadeh et al.	5,253,793 A	10/1993	Green et al.
5,116,349 A	5/1992	Aranyi	5,258,007 A	11/1993	Spetzler et al.
D327,323 S	6/1992	Hunt	5,258,008 A	11/1993	Wilk
5,119,009 A	6/1992	McCaleb et al.	5,258,009 A	11/1993	Connors
5,122,156 A	6/1992	Granger et al.	5,258,010 A	11/1993	Green et al.
5,124,990 A	6/1992	Williamson	5,258,012 A	11/1993	Luscombe et al.
5,129,570 A	7/1992	Schulze et al.	5,259,366 A	11/1993	Reydel et al.
5,137,198 A	8/1992	Nobis et al.	5,259,835 A	11/1993	Clark et al.
5,139,513 A	8/1992	Segato	5,260,637 A	11/1993	Pizzi
5,141,144 A	8/1992	Foslien et al.	5,261,135 A	11/1993	Mitchell
5,142,932 A	9/1992	Moya et al.	5,261,877 A	11/1993	Fine et al.
5,155,941 A	10/1992	Takahashi et al.	5,261,922 A	11/1993	Hood
5,156,315 A	10/1992	Green et al.	5,263,629 A	11/1993	Trumbull et al.
5,156,609 A	10/1992	Nakao et al.	5,263,937 A	11/1993	Shipp
5,156,614 A	10/1992	Green et al.	5,263,973 A	11/1993	Cook
5,158,222 A	10/1992	Green et al.	5,264,218 A	11/1993	Rogozinski
5,158,567 A	10/1992	Green	5,268,622 A	12/1993	Philipp
D330,699 S	11/1992	Gill	5,271,543 A	12/1993	Grant et al.
5,163,598 A	11/1992	Peters et al.	5,271,544 A	12/1993	Fox et al.
5,168,605 A	12/1992	Bartlett	RE34,519 E	1/1994	Fox et al.
5,170,925 A	12/1992	Madden et al.	5,275,322 A	1/1994	Brinkerhoff et al.
5,171,247 A	12/1992	Hughett et al.	5,275,323 A	1/1994	Schulze et al.
5,171,249 A	12/1992	Stefanchik et al.	5,275,608 A	1/1994	Forman et al.
5,171,253 A	12/1992	Klieman	5,279,416 A	1/1994	Malec et al.
5,173,053 A	12/1992	Swanson et al.	5,281,216 A	1/1994	Klicek
5,173,133 A	12/1992	Morin et al.	5,282,806 A	2/1994	Haber et al.
5,176,677 A	1/1993	Wuchinich	5,282,829 A	2/1994	Hermes
5,176,688 A	1/1993	Narayan et al.	5,284,128 A	2/1994	Hart
5,187,422 A	2/1993	Izenbaard et al.	5,285,381 A	2/1994	Iskarous et al.
5,188,102 A	2/1993	Idemoto et al.	5,285,945 A	2/1994	Brinkerhoff et al.
5,188,111 A	2/1993	Yates et al.	5,286,253 A	2/1994	Fucci
5,190,517 A	3/1993	Zieve et al.	5,289,963 A	3/1994	McGarry et al.
5,190,544 A	3/1993	Chapman et al.	5,290,271 A	3/1994	Jernberg
5,190,560 A	3/1993	Woods et al.	5,290,310 A	3/1994	Makower et al.
5,190,657 A	3/1993	Heagle et al.	5,292,053 A	3/1994	Bilotti et al.
5,192,288 A	3/1993	Thompson et al.	5,293,024 A	3/1994	Sugahara et al.
5,193,731 A	3/1993	Aranyi	5,297,714 A	3/1994	Kramer
5,195,505 A	3/1993	Josefsen	5,304,204 A	4/1994	Bregen
5,195,968 A	3/1993	Lundquist et al.	D347,474 S	5/1994	Olson
5,197,648 A	3/1993	Gingold	5,307,976 A	5/1994	Olson et al.
5,197,649 A	3/1993	Bessler et al.	5,308,576 A	5/1994	Green et al.
5,197,966 A	3/1993	Sommerkamp	5,309,387 A	5/1994	Mori et al.
5,197,970 A	3/1993	Green et al.	5,309,927 A	5/1994	Welch
5,200,280 A	4/1993	Karasa	5,312,023 A	5/1994	Green et al.
5,201,750 A	4/1993	Hocherl et al.	5,312,024 A	5/1994	Grant et al.
5,205,459 A	4/1993	Brinkerhoff et al.	5,312,329 A	5/1994	Beaty et al.
5,207,672 A	5/1993	Roth et al.	5,313,935 A	5/1994	Kortenbach et al.
5,207,697 A	5/1993	Carusillo et al.	5,313,967 A	5/1994	Lieber et al.
5,209,747 A	5/1993	Knoepfler	5,314,424 A	5/1994	Nicholas
5,209,756 A	5/1993	Seedhom et al.	5,314,445 A	5/1994	Heidmueller nee Degwitz et al.
5,211,649 A	5/1993	Kohler et al.	5,314,466 A	5/1994	Stern et al.
5,211,655 A	5/1993	Hasson	5,318,221 A	6/1994	Green et al.
5,217,457 A	6/1993	Delahuerge et al.	5,320,627 A	6/1994	Sorensen et al.
5,217,478 A	6/1993	Rexroth	D348,930 S	7/1994	Olson
5,219,111 A	6/1993	Bilotti et al.	5,326,013 A	7/1994	Green et al.
5,220,269 A	6/1993	Chen et al.	5,329,923 A	7/1994	Lundquist
5,221,036 A	6/1993	Takase	5,330,487 A	7/1994	Thornton et al.
			5,330,502 A	7/1994	Hassler et al.
			5,331,971 A	7/1994	Bales et al.
			5,332,142 A	7/1994	Robinson et al.
			5,333,422 A	8/1994	Warren et al.

US D890,784 S

Page 6

(56)

References Cited

U.S. PATENT DOCUMENTS

5,333,772 A	8/1994	Rothfuss et al.	5,395,033 A	3/1995	Byrne et al.
5,333,773 A	8/1994	Main et al.	5,395,034 A	3/1995	Allen et al.
5,334,183 A	8/1994	Wuchinich	5,395,312 A	3/1995	Desai
5,336,130 A	8/1994	Ray	5,395,384 A	3/1995	Duthoit et al.
5,336,229 A	8/1994	Noda	5,397,046 A	3/1995	Savage et al.
5,336,232 A	8/1994	Green et al.	5,397,324 A	3/1995	Carroll et al.
5,339,799 A	8/1994	Kami et al.	5,400,267 A	3/1995	Denen et al.
5,341,724 A	8/1994	Vatel	5,403,276 A	4/1995	Schechter et al.
5,341,807 A	8/1994	Nardella	5,403,312 A	4/1995	Yates et al.
5,341,810 A	8/1994	Dardel	5,404,106 A	4/1995	Matsuda
5,342,380 A	8/1994	Hood	5,404,870 A	4/1995	Brinkerhoff et al.
5,342,381 A	8/1994	Tidemand	5,404,960 A	4/1995	Wada et al.
5,342,385 A	8/1994	Norelli et al.	5,405,072 A	4/1995	Zlock et al.
5,342,395 A	8/1994	Jarrett et al.	5,405,073 A	4/1995	Porter
5,342,396 A	8/1994	Cook	5,405,344 A	4/1995	Williamson et al.
5,343,382 A	8/1994	Hale et al.	5,405,360 A	4/1995	Tovey
5,343,391 A	8/1994	Mushabac	5,407,293 A	4/1995	Crainich
5,344,059 A	9/1994	Green et al.	5,408,409 A	4/1995	Glassman et al.
5,344,060 A	9/1994	Gravener et al.	5,409,498 A	4/1995	Braddock et al.
5,344,454 A	9/1994	Clarke et al.	5,409,703 A	4/1995	McAnalley et al.
5,346,504 A	9/1994	Ortiz et al.	D357,981 S	5/1995	Green et al.
5,348,259 A	9/1994	Blanco et al.	5,411,481 A	5/1995	Allen et al.
5,350,355 A	9/1994	Sklar	5,411,508 A	5/1995	Bessler et al.
5,350,388 A	9/1994	Epstein	5,413,107 A	5/1995	Oakley et al.
5,350,391 A	9/1994	Iacovelli	5,413,267 A	5/1995	Solyntjes et al.
5,350,400 A	9/1994	Esposito et al.	5,413,268 A	5/1995	Green et al.
5,352,229 A	10/1994	Goble et al.	5,413,272 A	5/1995	Green et al.
5,352,235 A	10/1994	Koros et al.	5,413,573 A	5/1995	Koivukangas
5,352,238 A	10/1994	Green et al.	5,415,334 A	5/1995	Williamson et al.
5,354,250 A	10/1994	Christensen	5,415,335 A	5/1995	Knodell, Jr.
5,354,303 A	10/1994	Spaeth et al.	5,417,203 A	5/1995	Tovey et al.
5,356,006 A	10/1994	Alpern et al.	5,417,361 A	5/1995	Williamson, IV
5,356,064 A	10/1994	Green et al.	5,419,766 A	5/1995	Chang et al.
5,358,506 A	10/1994	Green et al.	5,421,829 A	6/1995	Olichney et al.
5,358,510 A	10/1994	Luscombe et al.	5,422,567 A	6/1995	Matsunaga
5,359,231 A	10/1994	Flowers et al.	5,423,471 A	6/1995	Mastri et al.
D352,780 S	11/1994	Glaeser et al.	5,423,809 A	6/1995	Klicek
5,359,993 A	11/1994	Slater et al.	5,423,835 A	6/1995	Green et al.
5,360,305 A	11/1994	Kerrigan	5,425,745 A	6/1995	Green et al.
5,360,428 A	11/1994	Hutchinson, Jr.	5,427,298 A	6/1995	Tegtmeier
5,361,902 A	11/1994	Abidin et al.	5,431,322 A	7/1995	Green et al.
5,364,001 A	11/1994	Bryan	5,431,323 A	7/1995	Smith et al.
5,364,002 A	11/1994	Green et al.	5,431,654 A	7/1995	Nic
5,364,003 A	11/1994	Williamson, IV	5,431,668 A	7/1995	Burbank, III et al.
5,366,133 A	11/1994	Geiste	5,433,721 A	7/1995	Hooven et al.
5,366,134 A	11/1994	Green et al.	5,437,681 A	8/1995	Meade et al.
5,366,479 A	11/1994	McGarry et al.	5,438,302 A	8/1995	Goble
5,368,015 A	11/1994	Wilk	5,438,997 A	8/1995	Sieben et al.
5,368,592 A	11/1994	Stern et al.	5,439,155 A	8/1995	Viola
5,369,565 A	11/1994	Chen et al.	5,439,156 A	8/1995	Grant et al.
5,370,645 A	12/1994	Klicek et al.	5,439,479 A	8/1995	Shichman et al.
5,372,124 A	12/1994	Takayama et al.	5,441,191 A	8/1995	Linden
5,372,596 A	12/1994	Klicek et al.	5,441,193 A	8/1995	Gravener
5,372,602 A	12/1994	Burke	5,441,483 A	8/1995	Avitall
5,374,277 A	12/1994	Hassler	5,441,494 A	8/1995	Ortiz
5,375,588 A	12/1994	Yoon	5,441,499 A	8/1995	Frittsch
5,376,095 A	12/1994	Ortiz	5,443,197 A	8/1995	Malis et al.
5,379,933 A	1/1995	Green et al.	5,443,463 A	8/1995	Stern et al.
5,381,649 A	1/1995	Webb	5,444,113 A	8/1995	Sinclair et al.
5,381,782 A	1/1995	DeLaRama et al.	5,445,155 A	8/1995	Sieben
5,381,943 A	1/1995	Allen et al.	5,445,304 A	8/1995	Plyley et al.
5,382,247 A	1/1995	Cimino et al.	5,445,604 A	8/1995	Lang
5,383,460 A	1/1995	Jang et al.	5,445,644 A	8/1995	Pietrafitta et al.
5,383,880 A	1/1995	Hooven	5,446,646 A	8/1995	Miyazaki
5,383,881 A	1/1995	Green et al.	5,447,265 A	9/1995	Vidal et al.
5,383,882 A	1/1995	Buess et al.	5,447,417 A	9/1995	Kuhl et al.
5,383,888 A	1/1995	Zvenyatsky et al.	5,447,513 A	9/1995	Davison et al.
5,383,895 A	1/1995	Holmes et al.	5,449,355 A	9/1995	Rhum et al.
5,388,568 A	2/1995	van der Heide	5,449,365 A	9/1995	Green et al.
5,389,098 A	2/1995	Tsuruta et al.	5,449,370 A	9/1995	Vaitekunas
5,389,102 A	2/1995	Green et al.	5,452,836 A	9/1995	Huitema et al.
5,389,104 A	2/1995	Hahnen et al.	5,452,837 A	9/1995	Williamson, IV et al.
5,391,180 A	2/1995	Tovey et al.	5,454,378 A	10/1995	Palmer et al.
5,392,979 A	2/1995	Green et al.	5,454,822 A	10/1995	Schob et al.
5,395,030 A	3/1995	Kuramoto et al.	5,454,827 A	10/1995	Aust et al.
			5,456,401 A	10/1995	Green et al.
			5,456,917 A	10/1995	Wise et al.
			5,458,279 A	10/1995	Plyley
			5,458,579 A	10/1995	Chodorow et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

5,462,215	A	10/1995	Viola et al.	5,531,305	A	7/1996	Roberts et al.
5,464,013	A	11/1995	Lemelson	5,531,744	A	7/1996	Nardella et al.
5,464,144	A	11/1995	Guy et al.	5,531,856	A	7/1996	Moll et al.
5,464,300	A	11/1995	Crainich	5,533,521	A	7/1996	Granger
5,465,819	A	11/1995	Weilant et al.	5,533,581	A	7/1996	Barth et al.
5,465,894	A	11/1995	Clark et al.	5,533,661	A	7/1996	Main et al.
5,465,895	A	11/1995	Knodel et al.	5,535,934	A	7/1996	Boiarski et al.
5,465,896	A	11/1995	Allen et al.	5,535,935	A	7/1996	Vidal et al.
5,466,020	A	11/1995	Page et al.	5,535,937	A	7/1996	Boiarski et al.
5,467,911	A	11/1995	Tsuruta et al.	5,540,375	A	7/1996	Bolanos et al.
5,468,253	A	11/1995	Bezwada et al.	5,540,705	A	7/1996	Meade et al.
5,470,006	A	11/1995	Rodak	5,541,376	A	7/1996	Ladtkow et al.
5,470,007	A	11/1995	Plyley et al.	5,541,489	A	7/1996	Dunstan
5,470,008	A	11/1995	Rodak	5,542,594	A	8/1996	McKean et al.
5,470,009	A	11/1995	Rodak	5,542,949	A	8/1996	Yoon
5,470,010	A	11/1995	Rothfuss et al.	5,543,119	A	8/1996	Sutter et al.
5,471,129	A	11/1995	Mann	5,543,695	A	8/1996	Culp et al.
5,472,132	A	12/1995	Savage et al.	5,544,802	A	8/1996	Crainich
5,472,442	A	12/1995	Kliceck	5,547,117	A	8/1996	Hamblin et al.
5,473,204	A	12/1995	Temple	5,549,583	A	8/1996	Sanford et al.
5,474,057	A	12/1995	Makower et al.	5,549,621	A	8/1996	Bessler et al.
5,474,223	A	12/1995	Viola et al.	5,549,627	A	8/1996	Kieturakis
5,474,566	A	12/1995	Alesi et al.	5,549,628	A	8/1996	Cooper et al.
5,474,570	A	12/1995	Kockerling et al.	5,549,637	A	8/1996	Crainich
5,476,206	A	12/1995	Green et al.	5,551,622	A	9/1996	Yoon
5,476,479	A	12/1995	Green et al.	5,553,624	A	9/1996	Francese et al.
5,476,481	A	12/1995	Schondorf	5,553,675	A	9/1996	Pitzen et al.
5,478,003	A	12/1995	Green et al.	5,553,765	A	9/1996	Knodel et al.
5,478,354	A	12/1995	Tovey et al.	5,554,148	A	9/1996	Aebischer et al.
5,480,089	A	1/1996	Blewett	5,554,169	A	9/1996	Green et al.
5,480,409	A	1/1996	Riza	5,556,020	A	9/1996	Hou
5,482,197	A	1/1996	Green et al.	5,556,416	A	9/1996	Clark et al.
5,483,952	A	1/1996	Aranyi	5,558,533	A	9/1996	Hashizawa et al.
5,484,095	A	1/1996	Green et al.	5,558,665	A	9/1996	Kieturakis
5,484,398	A	1/1996	Stoddard	5,558,671	A	9/1996	Yates
5,484,451	A	1/1996	Akopov et al.	5,560,530	A	10/1996	Bolanos et al.
5,485,947	A	1/1996	Olson et al.	5,560,532	A	10/1996	DeFonzo et al.
5,485,952	A	1/1996	Fontayne	5,561,881	A	10/1996	Klinger et al.
5,487,499	A	1/1996	Sorrentino et al.	5,562,239	A	10/1996	Boiarski et al.
5,487,500	A	1/1996	Knodel et al.	5,562,241	A	10/1996	Knodel et al.
5,489,058	A	2/1996	Plyley et al.	5,562,682	A	10/1996	Oberlin et al.
5,489,256	A	2/1996	Adair	5,562,690	A	10/1996	Green et al.
5,489,290	A	2/1996	Furnish	5,562,701	A	10/1996	Huitema et al.
5,490,819	A	2/1996	Nicholas et al.	5,562,702	A	10/1996	Huitema et al.
5,492,671	A	2/1996	Krafft	5,563,481	A	10/1996	Krause
5,496,312	A	3/1996	Kliceck	5,564,615	A	10/1996	Bishop et al.
5,496,317	A	3/1996	Goble et al.	5,569,161	A	10/1996	Ebling et al.
5,497,933	A	3/1996	DeFonzo et al.	5,569,270	A	10/1996	Weng
5,498,164	A	3/1996	Ward et al.	5,569,284	A	10/1996	Young et al.
5,498,838	A	3/1996	Furman	5,571,090	A	11/1996	Sherts
5,501,654	A	3/1996	Failla et al.	5,571,100	A	11/1996	Goble et al.
5,503,320	A	4/1996	Webster et al.	5,571,116	A	11/1996	Bolanos et al.
5,503,635	A	4/1996	Sauer et al.	5,571,285	A	11/1996	Chow et al.
5,503,638	A	4/1996	Cooper et al.	5,571,488	A	11/1996	Beerstecher et al.
5,505,363	A	4/1996	Green et al.	5,573,169	A	11/1996	Green et al.
5,507,425	A	4/1996	Ziglioli	5,573,543	A	11/1996	Akopov et al.
5,507,426	A	4/1996	Young et al.	5,574,431	A	11/1996	McKeown et al.
5,509,596	A	4/1996	Green et al.	5,575,054	A	11/1996	Klinzing et al.
5,509,916	A	4/1996	Taylor	5,575,789	A	11/1996	Bell et al.
5,511,564	A	4/1996	Wilk	5,575,799	A	11/1996	Bolanos et al.
5,514,129	A	5/1996	Smith	5,575,803	A	11/1996	Cooper et al.
5,514,149	A	5/1996	Green et al.	5,575,805	A	11/1996	Li
5,514,157	A	5/1996	Nicholas et al.	5,577,654	A	11/1996	Bishop
5,518,163	A	5/1996	Hooven	5,578,052	A	11/1996	Koros et al.
5,518,164	A	5/1996	Hooven	5,579,978	A	12/1996	Green et al.
5,520,609	A	5/1996	Moll et al.	5,580,067	A	12/1996	Hamblin et al.
5,520,634	A	5/1996	Fox et al.	5,582,611	A	12/1996	Tsuruta et al.
5,520,678	A	5/1996	Heckele et al.	5,582,617	A	12/1996	Klieman et al.
5,520,700	A	5/1996	Beyar et al.	5,582,907	A	12/1996	Pall
5,522,817	A	6/1996	Sander et al.	5,583,114	A	12/1996	Barrows et al.
5,522,831	A	6/1996	Sleister et al.	5,584,425	A	12/1996	Savage et al.
5,527,264	A	6/1996	Moll et al.	5,586,711	A	12/1996	Plyley et al.
5,527,320	A	6/1996	Carruthers et al.	5,588,579	A	12/1996	Schnut et al.
5,529,235	A	6/1996	Boiarski et al.	5,588,580	A	12/1996	Paul et al.
D372,086	S	7/1996	Grasso et al.	5,588,581	A	12/1996	Conlon et al.
				5,591,170	A	1/1997	Spievack et al.
				5,591,187	A	1/1997	Dekel
				5,597,107	A	1/1997	Knodel et al.
				5,599,151	A	2/1997	Daum et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

5,599,279 A	2/1997	Slotman et al.	5,658,298 A	8/1997	Vincent et al.
5,599,344 A	2/1997	Paterson	5,658,300 A	8/1997	Bito et al.
5,599,350 A	2/1997	Schulze et al.	5,658,307 A	8/1997	Exconde
5,599,852 A	2/1997	Scopelianos et al.	5,662,258 A	9/1997	Knodel et al.
5,601,224 A	2/1997	Bishop et al.	5,662,260 A	9/1997	Yoon
5,601,573 A	2/1997	Fogelberg et al.	5,662,662 A	9/1997	Bishop et al.
5,601,604 A	2/1997	Vincent	5,662,667 A	9/1997	Knodel
5,602,449 A	2/1997	Krause et al.	5,665,085 A	9/1997	Nardella
5,603,443 A	2/1997	Clark et al.	5,667,517 A	9/1997	Hooven
5,605,272 A	2/1997	Witt et al.	5,667,526 A	9/1997	Levin
5,605,273 A	2/1997	Hamblin et al.	5,667,527 A	9/1997	Cook
5,607,094 A	3/1997	Clark et al.	5,667,864 A	9/1997	Landoll
5,607,095 A	3/1997	Smith et al.	5,669,544 A	9/1997	Schulze et al.
5,607,433 A	3/1997	Polla et al.	5,669,904 A	9/1997	Platt, Jr. et al.
5,607,450 A	3/1997	Zvenyatsky et al.	5,669,907 A	9/1997	Platt, Jr. et al.
5,607,474 A	3/1997	Athanasίου et al.	5,669,918 A	9/1997	Balazs et al.
5,609,285 A	3/1997	Grant et al.	5,672,945 A	9/1997	Krause
5,609,601 A	3/1997	Kolesa et al.	5,673,840 A	10/1997	Schulze et al.
5,611,709 A	3/1997	McAnulty	5,673,841 A	10/1997	Schulze et al.
5,613,499 A	3/1997	Palmer et al.	5,673,842 A	10/1997	Bittner et al.
5,613,937 A	3/1997	Garrison et al.	5,674,286 A	10/1997	D'Alessio et al.
5,613,966 A	3/1997	Makower et al.	5,678,748 A	10/1997	Plyley et al.
5,614,887 A	3/1997	Buchbinder	5,680,981 A	10/1997	Mililli et al.
5,615,820 A	4/1997	Viola	5,680,982 A	10/1997	Schulze et al.
5,618,294 A	4/1997	Aust et al.	5,680,983 A	10/1997	Plyley et al.
5,618,303 A	4/1997	Marlow et al.	5,681,341 A	10/1997	Lunsford et al.
5,618,307 A	4/1997	Donlon et al.	5,683,349 A	11/1997	Makower et al.
5,619,992 A	4/1997	Guthrie et al.	5,685,474 A	11/1997	Seeber
5,620,289 A	4/1997	Curry	5,686,090 A	11/1997	Schilder et al.
5,620,326 A	4/1997	Younker	5,688,270 A	11/1997	Yates et al.
5,620,452 A	4/1997	Yoon	5,690,269 A	11/1997	Bolanos et al.
5,624,398 A	4/1997	Smith et al.	5,690,675 A	11/1997	Sawyer et al.
5,624,452 A	4/1997	Yates	5,692,668 A	12/1997	Schulze et al.
5,626,587 A	5/1997	Bishop et al.	5,693,020 A	12/1997	Rauh
5,626,595 A	5/1997	Sklar et al.	5,693,042 A	12/1997	Boiarski et al.
5,628,446 A	5/1997	Geiste et al.	5,693,051 A	12/1997	Schulze et al.
5,628,743 A	5/1997	Cimino	5,695,494 A	12/1997	Becker
5,628,745 A	5/1997	Bek	5,695,502 A	12/1997	Pier et al.
5,630,539 A	5/1997	Plyley et al.	5,695,504 A	12/1997	Gifford, III et al.
5,630,540 A	5/1997	Blewett	5,695,524 A	12/1997	Kelley et al.
5,630,541 A	5/1997	Williamson, IV et al.	5,697,542 A	12/1997	Knodel et al.
5,630,782 A	5/1997	Adair	5,697,543 A	12/1997	Burdorff
5,631,973 A	5/1997	Green	5,697,909 A	12/1997	Eggers et al.
5,632,432 A	5/1997	Schulze et al.	5,697,943 A	12/1997	Sauer et al.
5,632,433 A	5/1997	Grant et al.	5,700,270 A	12/1997	Peyser et al.
5,633,374 A	5/1997	Humphrey et al.	5,700,276 A	12/1997	Benecke
5,634,584 A	6/1997	Okorocha et al.	5,702,387 A	12/1997	Arts et al.
5,636,779 A	6/1997	Palmer	5,702,408 A	12/1997	Wales et al.
5,636,780 A	6/1997	Green et al.	5,702,409 A	12/1997	Rayburn et al.
5,638,582 A	6/1997	Klatt et al.	5,704,087 A	1/1998	Strub
5,639,008 A	6/1997	Gallagher et al.	5,704,534 A	1/1998	Huitema et al.
D381,077 S	7/1997	Hunt	5,706,997 A	1/1998	Green et al.
5,643,291 A	7/1997	Pier et al.	5,706,998 A	1/1998	Plyley et al.
5,643,293 A	7/1997	Kogasaka et al.	5,707,392 A	1/1998	Kortenbach
5,643,294 A	7/1997	Tovey et al.	5,709,334 A	1/1998	Sorrentino et al.
5,643,319 A	7/1997	Green et al.	5,709,335 A	1/1998	Heck
5,645,209 A	7/1997	Green et al.	5,709,680 A	1/1998	Yates et al.
5,647,526 A	7/1997	Green et al.	5,709,706 A	1/1998	Kienzle et al.
5,647,869 A	7/1997	Goble et al.	5,711,472 A	1/1998	Bryan
5,649,937 A	7/1997	Bito et al.	5,712,460 A	1/1998	Carr et al.
5,649,956 A	7/1997	Jensen et al.	5,713,128 A	2/1998	Schrenk et al.
5,651,491 A	7/1997	Heaton et al.	5,713,505 A	2/1998	Huitema
5,651,762 A	7/1997	Bridges	5,713,895 A	2/1998	Lontine et al.
5,651,821 A	7/1997	Uchida	5,713,896 A	2/1998	Nardella
5,653,373 A	8/1997	Green et al.	5,713,920 A	2/1998	Bezswana et al.
5,653,374 A	8/1997	Young et al.	5,715,604 A	2/1998	Lanzoni
5,653,677 A	8/1997	Okada et al.	5,715,987 A	2/1998	Kelley et al.
5,653,721 A	8/1997	Knodel et al.	5,715,988 A	2/1998	Palmer
5,653,748 A	8/1997	Strecker	5,716,366 A	2/1998	Yates
5,655,698 A	8/1997	Yoon	5,718,359 A	2/1998	Palmer et al.
5,657,417 A	8/1997	Di Troia	5,718,360 A	2/1998	Green et al.
5,657,429 A	8/1997	Wang et al.	5,718,548 A	2/1998	Cotellessa
5,657,921 A	8/1997	Young et al.	5,718,714 A	2/1998	Livneh
5,658,238 A	8/1997	Suzuki et al.	5,720,744 A	2/1998	Eggleston et al.
5,658,281 A	8/1997	Heard	D393,067 S	3/1998	Geary et al.
			5,724,025 A	3/1998	Tavori
			5,725,536 A	3/1998	Oberlin et al.
			5,725,554 A	3/1998	Simon et al.
			5,728,110 A	3/1998	Vidal et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

5,728,113	A	3/1998	Sherts	5,807,378	A	9/1998	Jensen et al.
5,728,121	A	3/1998	Bimbo et al.	5,807,393	A	9/1998	Williamson, IV et al.
5,730,758	A	3/1998	Allgeyer	5,809,441	A	9/1998	McKee
5,732,821	A	3/1998	Stone et al.	5,810,721	A	9/1998	Mueller et al.
5,732,871	A	3/1998	Clark et al.	5,810,811	A	9/1998	Yates et al.
5,732,872	A	3/1998	Bolduc et al.	5,810,846	A	9/1998	Virnich et al.
5,733,308	A	3/1998	Daugherty et al.	5,810,855	A	9/1998	Rayburn et al.
5,735,445	A	4/1998	Vidal et al.	5,812,188	A	9/1998	Adair
5,735,848	A	4/1998	Yates et al.	5,813,813	A	9/1998	Daum et al.
5,735,874	A	4/1998	Measamer et al.	5,814,055	A	9/1998	Knodel et al.
5,738,474	A	4/1998	Blewett	5,814,057	A	9/1998	Oi et al.
5,738,629	A	4/1998	Moll et al.	5,816,471	A	10/1998	Plyley et al.
5,738,648	A	4/1998	Lands et al.	5,817,084	A	10/1998	Jensen
5,741,271	A	4/1998	Nakao et al.	5,817,091	A	10/1998	Nardella et al.
5,743,456	A	4/1998	Jones et al.	5,817,093	A	10/1998	Williamson, IV et al.
5,747,953	A	5/1998	Philipp	5,817,109	A	10/1998	McGarry et al.
5,749,889	A	5/1998	Bacich et al.	5,817,119	A	10/1998	Klieman et al.
5,749,893	A	5/1998	Vidal et al.	5,820,009	A	10/1998	Melling et al.
5,749,896	A	5/1998	Cook	5,823,066	A	10/1998	Huitema et al.
5,749,968	A	5/1998	Melanson et al.	5,824,333	A	10/1998	Scopelianos et al.
5,752,644	A	5/1998	Bolanos et al.	5,826,776	A	10/1998	Schulze et al.
5,752,965	A	5/1998	Francis et al.	5,827,271	A	10/1998	Buyse et al.
5,752,970	A	5/1998	Yoon	5,827,298	A	10/1998	Hart et al.
5,755,717	A	5/1998	Yates et al.	5,827,323	A	10/1998	Klieman et al.
5,758,814	A	6/1998	Gallagher et al.	5,829,662	A	11/1998	Allen et al.
5,762,255	A	6/1998	Chrisman et al.	5,830,598	A	11/1998	Patterson
5,762,256	A	6/1998	Mastri et al.	5,833,690	A	11/1998	Yates et al.
5,765,565	A	6/1998	Adair	5,833,695	A	11/1998	Yoon
5,766,188	A	6/1998	Igaki	5,833,696	A	11/1998	Whitfield et al.
5,766,205	A	6/1998	Zvenyatsky et al.	5,836,503	A	11/1998	Ehrenfels et al.
5,769,303	A	6/1998	Knodel et al.	5,836,960	A	11/1998	Kolesa et al.
5,769,748	A	6/1998	Eyerly et al.	5,839,369	A	11/1998	Chatterjee et al.
5,769,791	A	6/1998	Benaron et al.	5,839,639	A	11/1998	Sauer et al.
5,769,892	A	6/1998	Kingwell	5,841,284	A	11/1998	Takahashi
5,772,379	A	6/1998	Evensen	5,843,021	A	12/1998	Edwards et al.
5,772,578	A	6/1998	Heimberger et al.	5,843,096	A	12/1998	Igaki et al.
5,772,659	A	6/1998	Becker et al.	5,843,097	A	12/1998	Mayenberger et al.
5,773,991	A	6/1998	Chen	5,843,122	A	12/1998	Riza
5,776,130	A	7/1998	Buyse et al.	5,843,132	A	12/1998	Ilvento
5,778,939	A	7/1998	Hok-Yin	5,843,169	A	12/1998	Taheri
5,779,130	A	7/1998	Alesi et al.	5,846,254	A	12/1998	Schulze et al.
5,779,131	A	7/1998	Knodel et al.	5,847,566	A	12/1998	Marritt et al.
5,779,132	A	7/1998	Knodel et al.	5,849,011	A	12/1998	Jones et al.
5,782,396	A	7/1998	Mastri et al.	5,849,020	A	12/1998	Long et al.
5,782,397	A	7/1998	Koukline	5,849,023	A	12/1998	Mericle
5,782,748	A	7/1998	Palmer et al.	5,851,179	A	12/1998	Ritson et al.
5,782,749	A	7/1998	Riza	5,851,212	A	12/1998	Zirps et al.
5,782,859	A	7/1998	Nicholas et al.	5,853,366	A	12/1998	Dowlatsahi
5,784,934	A	7/1998	Izumisawa	5,855,311	A	1/1999	Hamblin et al.
5,785,232	A	7/1998	Vidal et al.	5,855,583	A	1/1999	Wang et al.
5,785,647	A	7/1998	Tompkins et al.	5,860,581	A	1/1999	Robertson et al.
5,787,897	A	8/1998	Kieturakis	5,860,975	A	1/1999	Goble et al.
5,791,231	A	8/1998	Cohn et al.	5,865,361	A	2/1999	Milliman et al.
5,792,135	A	8/1998	Madhani et al.	5,865,638	A	2/1999	Trafton
5,792,162	A	8/1998	Jolly et al.	5,868,361	A	2/1999	Rinderer
5,792,165	A	8/1998	Klieman et al.	5,868,760	A	2/1999	McGuckin, Jr.
5,792,573	A	8/1998	Pitzen et al.	5,868,790	A	2/1999	Vincent et al.
5,794,834	A	8/1998	Hamblin et al.	5,871,135	A	2/1999	Williamson, IV et al.
5,796,188	A	8/1998	Bays	5,873,885	A	2/1999	Weidenbenner
5,797,536	A	8/1998	Smith et al.	5,876,401	A	3/1999	Schulze et al.
5,797,537	A	8/1998	Oberlin et al.	5,878,193	A	3/1999	Wang et al.
5,797,538	A	8/1998	Heaton et al.	5,878,607	A	3/1999	Nunes et al.
5,797,637	A	8/1998	Ervin	5,878,937	A	3/1999	Green et al.
5,797,900	A	8/1998	Madhani et al.	5,878,938	A	3/1999	Bittner et al.
5,797,906	A	8/1998	Rhum et al.	5,881,777	A	3/1999	Bassi et al.
5,797,927	A	8/1998	Yoon	5,891,094	A	4/1999	Masterson et al.
5,797,941	A	8/1998	Schulze et al.	5,891,160	A	4/1999	Williamson, IV et al.
5,797,959	A	8/1998	Castro et al.	5,891,558	A	4/1999	Bell et al.
5,799,857	A	9/1998	Robertson et al.	5,893,506	A	4/1999	Powell
5,800,379	A	9/1998	Edwards	5,893,835	A	4/1999	Witt et al.
5,800,423	A	9/1998	Jensen	5,893,878	A	4/1999	Pierce
5,804,726	A	9/1998	Geib et al.	5,894,979	A	4/1999	Powell
5,804,936	A	9/1998	Brodsky et al.	5,897,552	A	4/1999	Edwards et al.
5,806,676	A	9/1998	Wasgien	5,897,562	A	4/1999	Bolanos et al.
5,807,376	A	9/1998	Viola et al.	5,899,824	A	5/1999	Kurtz et al.
				5,899,914	A	5/1999	Zirps et al.
				5,901,895	A	5/1999	Heaton et al.
				5,902,312	A	5/1999	Frater et al.
				5,903,117	A	5/1999	Gregory

(56)

References Cited

U.S. PATENT DOCUMENTS

5,904,647	A	5/1999	Ouchi	6,024,748	A	2/2000	Manzo et al.
5,904,693	A	5/1999	Dicesare et al.	6,024,750	A	2/2000	Mastri et al.
5,904,702	A	5/1999	Ek et al.	6,024,764	A	2/2000	Schroepel
5,906,577	A	5/1999	Beane et al.	6,027,501	A	2/2000	Goble et al.
5,906,625	A	5/1999	Bito et al.	6,030,384	A	2/2000	Nezhat
5,907,211	A	5/1999	Hall et al.	6,032,849	A	3/2000	Mastri et al.
5,908,402	A	6/1999	Blythe	6,033,105	A	3/2000	Barker et al.
5,908,427	A	6/1999	McKean et al.	6,033,378	A	3/2000	Lundquist et al.
5,909,062	A	6/1999	Krietzman	6,033,399	A	3/2000	Gines
5,911,353	A	6/1999	Bolanos et al.	6,033,427	A	3/2000	Lee
5,915,616	A	6/1999	Viola et al.	6,036,641	A	3/2000	Taylor et al.
5,916,225	A	6/1999	Kugel	6,036,667	A	3/2000	Manna et al.
5,918,791	A	7/1999	Sorrentino et al.	6,037,724	A	3/2000	Buss et al.
5,919,198	A	7/1999	Graves, Jr. et al.	6,037,927	A	3/2000	Rosenberg
5,921,956	A	7/1999	Grinberg et al.	6,039,733	A	3/2000	Buyse et al.
5,924,864	A	7/1999	Loge et al.	6,039,734	A	3/2000	Goble
5,928,137	A	7/1999	Green	6,042,601	A	3/2000	Smith
5,928,256	A	7/1999	Riza	6,042,607	A	3/2000	Williamson, IV et al.
5,931,847	A	8/1999	Bittner et al.	6,043,626	A	3/2000	Snyder et al.
5,931,853	A	8/1999	McEwen et al.	6,045,560	A	4/2000	McKean et al.
5,937,951	A	8/1999	Izuchukwu et al.	6,047,861	A	4/2000	Vidal et al.
5,938,667	A	8/1999	Peyser et al.	6,049,145	A	4/2000	Austin et al.
5,941,442	A	8/1999	Geiste et al.	6,050,172	A	4/2000	Corves et al.
5,941,890	A	8/1999	Voegelé et al.	6,050,472	A	4/2000	Shibata
5,944,172	A	8/1999	Hannula	6,050,989	A	4/2000	Fox et al.
5,944,715	A	8/1999	Goble et al.	6,050,990	A	4/2000	Tankovich et al.
5,946,978	A	9/1999	Yamashita	6,050,996	A	4/2000	Schmaltz et al.
5,947,984	A	9/1999	Whipple	6,053,390	A	4/2000	Green et al.
5,947,996	A	9/1999	Logeman	6,053,899	A	4/2000	Slanda et al.
5,948,030	A	9/1999	Miller et al.	6,053,922	A	4/2000	Krause et al.
5,948,429	A	9/1999	Bell et al.	6,054,142	A	4/2000	Li et al.
5,951,301	A	9/1999	Younker	6,055,062	A	4/2000	Dina et al.
5,951,516	A	9/1999	Bunyan	RE36,720	E	5/2000	Green et al.
5,951,552	A	9/1999	Long et al.	6,056,735	A	5/2000	Okada et al.
5,951,574	A	9/1999	Stefanchik et al.	6,056,746	A	5/2000	Goble et al.
5,951,575	A	9/1999	Bolduc et al.	6,059,806	A	5/2000	Hoegerle
5,951,581	A	9/1999	Saadat et al.	6,062,360	A	5/2000	Shields
5,954,259	A	9/1999	Viola et al.	6,063,020	A	5/2000	Jones et al.
5,957,831	A	9/1999	Adair	6,063,025	A	5/2000	Bridges et al.
5,964,394	A	10/1999	Robertson	6,063,050	A	5/2000	Manna et al.
5,964,774	A	10/1999	McKean et al.	6,063,095	A	5/2000	Wang et al.
5,966,126	A	10/1999	Szabo	6,063,097	A	5/2000	Oi et al.
5,971,916	A	10/1999	Koren	6,063,098	A	5/2000	Houser et al.
5,973,221	A	10/1999	Collyer et al.	6,065,679	A	5/2000	Levie et al.
D416,089	S	11/1999	Barton et al.	6,065,919	A	5/2000	Peck
5,976,122	A	11/1999	Madhani et al.	6,066,132	A	5/2000	Chen et al.
5,977,746	A	11/1999	Hershberger et al.	6,066,151	A	5/2000	Miyawaki et al.
5,980,248	A	11/1999	Kusakabe et al.	6,068,627	A	5/2000	Orszulak et al.
5,984,949	A	11/1999	Levin	6,071,233	A	6/2000	Ishikawa et al.
5,988,479	A	11/1999	Palmer	6,074,386	A	6/2000	Goble et al.
5,990,379	A	11/1999	Gregory	6,074,401	A	6/2000	Gardiner et al.
5,993,466	A	11/1999	Yoon	6,077,280	A	6/2000	Fossum
5,997,528	A	12/1999	Bisch et al.	6,077,286	A	6/2000	Cuschieri et al.
5,997,552	A	12/1999	Person et al.	6,077,290	A	6/2000	Marini
6,001,108	A	12/1999	Wang et al.	6,079,606	A	6/2000	Milliman et al.
6,003,517	A	12/1999	Sheffield et al.	6,080,181	A	6/2000	Jensen et al.
6,004,319	A	12/1999	Goble et al.	6,082,577	A	7/2000	Coates et al.
6,004,335	A	12/1999	Vaitekunas et al.	6,083,191	A	7/2000	Rose
6,007,521	A	12/1999	Bidwell et al.	6,083,223	A	7/2000	Baker
6,010,054	A	1/2000	Johnson et al.	6,083,234	A	7/2000	Nicholas et al.
6,010,513	A	1/2000	Tormala et al.	6,083,242	A	7/2000	Cook
6,010,520	A	1/2000	Pattison	6,086,544	A	7/2000	Hibner et al.
6,012,494	A	1/2000	Balazs	6,086,600	A	7/2000	Kortenbach
6,013,076	A	1/2000	Goble et al.	6,090,106	A	7/2000	Goble et al.
6,015,406	A	1/2000	Goble et al.	6,093,186	A	7/2000	Goble
6,015,417	A	1/2000	Reynolds, Jr.	6,099,537	A	8/2000	Sugai et al.
6,017,322	A	1/2000	Snoke et al.	6,099,551	A	8/2000	Gabbay
6,017,354	A	1/2000	Culp et al.	6,102,271	A	8/2000	Longo et al.
6,017,356	A	1/2000	Frederick et al.	6,102,926	A	8/2000	Tartaglia et al.
6,018,227	A	1/2000	Kumar et al.	6,104,162	A	8/2000	Sainsbury et al.
6,019,745	A	2/2000	Gray	6,104,304	A	8/2000	Clark et al.
6,022,352	A	2/2000	Vandewalle	6,106,511	A	8/2000	Jensen
6,023,641	A	2/2000	Thompson	6,109,500	A	8/2000	Alli et al.
6,024,708	A	2/2000	Bales et al.	6,110,187	A	8/2000	Donlon
6,024,741	A	2/2000	Williamson, IV et al.	6,113,618	A	9/2000	Nic
				6,117,148	A	9/2000	Ravo et al.
				6,117,158	A	9/2000	Measamer et al.
				6,119,913	A	9/2000	Adams et al.
				6,120,433	A	9/2000	Mizuno et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

6,120,462	A	9/2000	Hibner et al.	6,238,384	B1	5/2001	Peer
6,123,241	A	9/2000	Walter et al.	6,241,139	B1	6/2001	Milliman et al.
6,123,701	A	9/2000	Nezhat	6,241,140	B1	6/2001	Adams et al.
H001904	H	10/2000	Yates et al.	6,241,723	B1	6/2001	Heim et al.
6,126,058	A	10/2000	Adams et al.	6,245,084	B1	6/2001	Mark et al.
6,126,359	A	10/2000	Dittrich et al.	6,248,116	B1	6/2001	Chevillon et al.
6,126,670	A	10/2000	Walker et al.	6,248,117	B1	6/2001	Blatter
6,131,789	A	10/2000	Schulze et al.	6,249,076	B1	6/2001	Madden et al.
6,131,790	A	10/2000	Piraka	6,249,105	B1	6/2001	Andrews et al.
6,132,368	A	10/2000	Cooper	6,250,532	B1	6/2001	Green et al.
6,134,962	A	10/2000	Sugitani	6,251,485	B1	6/2001	Harris et al.
6,139,546	A	10/2000	Koenig et al.	D445,745	S	7/2001	Norman
6,142,149	A	11/2000	Steen	6,254,534	B1	7/2001	Butler et al.
6,142,933	A	11/2000	Longo et al.	6,254,619	B1	7/2001	Garabet et al.
6,147,135	A	11/2000	Yuan et al.	6,254,642	B1	7/2001	Taylor
6,149,660	A	11/2000	Laufer et al.	6,258,107	B1	7/2001	Balazs et al.
6,151,323	A	11/2000	O'Connell et al.	6,261,286	B1	7/2001	Goble et al.
6,152,935	A	11/2000	Kammerer et al.	6,261,679	B1	7/2001	Chen et al.
6,155,473	A	12/2000	Tompkins et al.	6,264,086	B1	7/2001	McGuckin, Jr.
6,156,056	A	12/2000	Kearns et al.	6,264,087	B1	7/2001	Whitman
6,157,169	A	12/2000	Lee	6,264,617	B1	7/2001	Bales et al.
6,159,146	A	12/2000	El Gazayerli	6,270,508	B1	8/2001	Klieman et al.
6,159,200	A	12/2000	Verdura et al.	6,270,916	B1	8/2001	Sink et al.
6,159,224	A	12/2000	Yoon	6,273,252	B1	8/2001	Mitchell
6,162,208	A	12/2000	Hipps	6,273,876	B1	8/2001	Klima et al.
6,162,220	A	12/2000	Nezhat	6,273,897	B1	8/2001	Daleandro et al.
6,162,537	A	12/2000	Martin et al.	6,277,114	B1	8/2001	Bullivant et al.
6,165,175	A	12/2000	Wampler et al.	6,280,407	B1	8/2001	Manna et al.
6,165,184	A	12/2000	Verdura et al.	6,283,981	B1	9/2001	Beaupre
6,165,188	A	12/2000	Saadat et al.	6,293,927	B1	9/2001	McGuckin, Jr.
6,167,185	A	12/2000	Smiley et al.	6,293,942	B1	9/2001	Goble et al.
6,168,605	B1	1/2001	Measamer et al.	6,296,640	B1	10/2001	Wampler et al.
6,171,305	B1	1/2001	Sherman	6,302,311	B1	10/2001	Adams et al.
6,171,316	B1	1/2001	Kovac et al.	6,302,743	B1	10/2001	Chiu et al.
6,171,330	B1	1/2001	Benchetrit	6,305,891	B1	10/2001	Burlingame
6,173,074	B1	1/2001	Russo	6,306,134	B1	10/2001	Goble et al.
6,174,308	B1	1/2001	Goble et al.	6,306,149	B1	10/2001	Meade
6,174,309	B1	1/2001	Wrublewski et al.	6,306,424	B1	10/2001	Vyakarnam et al.
6,174,318	B1	1/2001	Bates et al.	6,309,397	B1	10/2001	Julian et al.
6,175,290	B1	1/2001	Forsythe et al.	6,309,400	B2	10/2001	Beaupre
6,179,195	B1	1/2001	Adams et al.	6,309,403	B1	10/2001	Minor et al.
6,179,776	B1	1/2001	Adams et al.	6,312,435	B1	11/2001	Wallace et al.
6,181,105	B1	1/2001	Cutolo et al.	6,315,184	B1	11/2001	Whitman
6,182,673	B1	2/2001	Kindermann et al.	6,319,510	B1	11/2001	Yates
6,185,356	B1	2/2001	Parker et al.	6,320,123	B1	11/2001	Reimers
6,186,142	B1	2/2001	Schmidt et al.	6,322,494	B1	11/2001	Bullivant et al.
6,187,003	B1	2/2001	Byusse et al.	6,324,339	B1	11/2001	Hudson et al.
6,190,386	B1	2/2001	Rydell	6,325,799	B1	12/2001	Goble
6,193,129	B1	2/2001	Bittner et al.	6,325,805	B1	12/2001	Ogilvie et al.
6,197,042	B1	3/2001	Ginn et al.	6,325,810	B1	12/2001	Hamilton et al.
6,200,330	B1	3/2001	Benderev et al.	6,328,498	B1	12/2001	Mersch
6,202,914	B1	3/2001	Geiste et al.	6,330,965	B1	12/2001	Milliman et al.
6,206,894	B1	3/2001	Thompson et al.	6,331,181	B1	12/2001	Tierney et al.
6,206,897	B1	3/2001	Jamiolkowski et al.	6,331,761	B1	12/2001	Kumar et al.
6,206,903	B1	3/2001	Ramans	6,333,029	B1	12/2001	Vyakarnam et al.
6,206,904	B1	3/2001	Ouchi	6,334,860	B1	1/2002	Dorn
6,209,414	B1	4/2001	Uneme	6,334,861	B1	1/2002	Chandler et al.
6,210,403	B1	4/2001	Klicek	6,336,926	B1	1/2002	Goble
6,213,999	B1	4/2001	Platt, Jr. et al.	6,338,737	B1	1/2002	Toledano
6,214,028	B1	4/2001	Yoon et al.	6,343,731	B1	2/2002	Adams et al.
6,220,368	B1	4/2001	Ark et al.	6,346,077	B1	2/2002	Taylor et al.
6,221,007	B1	4/2001	Green	6,348,061	B1	2/2002	Whitman
6,221,023	B1	4/2001	Matsuba et al.	D454,951	S	3/2002	Bon
6,223,100	B1	4/2001	Green	6,352,503	B1	3/2002	Matsui et al.
6,223,835	B1	5/2001	Habedank et al.	6,352,532	B1	3/2002	Kramer et al.
6,224,617	B1	5/2001	Saadat et al.	6,355,699	B1	3/2002	Vyakarnam et al.
6,228,080	B1	5/2001	Gines	6,356,072	B1	3/2002	Chass
6,228,081	B1	5/2001	Goble	6,358,224	B1	3/2002	Tims et al.
6,228,083	B1	5/2001	Lands et al.	6,358,263	B2	3/2002	Mark et al.
6,228,084	B1	5/2001	Kirwan, Jr.	6,358,459	B1	3/2002	Ziegler et al.
6,228,089	B1	5/2001	Wahrburg	6,364,877	B1	4/2002	Goble et al.
6,228,098	B1	5/2001	Kayan et al.	6,364,888	B1	4/2002	Niemeyer et al.
6,231,565	B1	5/2001	Tovey et al.	6,366,441	B1	4/2002	Ozawa et al.
6,234,178	B1	5/2001	Goble et al.	6,370,981	B2	4/2002	Watarai
6,237,604	B1	5/2001	Burnside et al.	6,371,114	B1	4/2002	Schmidt et al.
				6,373,152	B1	4/2002	Wang et al.
				6,377,011	B1	4/2002	Ben-Ur
				6,383,201	B1	5/2002	Dong
				6,387,092	B1	5/2002	Burnside et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

6,387,113	B1	5/2002	Hawkins et al.	6,500,194	B2	12/2002	Benderev et al.
6,387,114	B2	5/2002	Adams	6,503,139	B2	1/2003	Coral
6,391,038	B2	5/2002	Vargas et al.	6,503,257	B2	1/2003	Grant et al.
6,392,854	B1	5/2002	O'Gorman	6,503,259	B2	1/2003	Huxel et al.
6,394,998	B1	5/2002	Wallace et al.	6,505,768	B2	1/2003	Whitman
6,398,779	B1	6/2002	Buyse et al.	6,506,197	B1	1/2003	Rollero et al.
6,398,781	B1	6/2002	Goble et al.	6,510,854	B2	1/2003	Goble
6,398,797	B2	6/2002	Bombard et al.	6,511,468	B1	1/2003	Cragg et al.
6,402,766	B2	6/2002	Bowman et al.	6,512,360	B1	1/2003	Goto et al.
6,406,440	B1	6/2002	Stefanchik	6,514,252	B2	2/2003	Nezhat et al.
6,406,472	B1	6/2002	Jensen	6,516,073	B1	2/2003	Schulz et al.
6,409,724	B1	6/2002	Penny et al.	6,517,528	B1	2/2003	Pantages et al.
H002037	H	7/2002	Yates et al.	6,517,535	B2	2/2003	Edwards
6,412,639	B1	7/2002	Hickey	6,517,565	B1	2/2003	Whitman et al.
6,413,274	B1	7/2002	Pedros	6,517,566	B1	2/2003	Hovland et al.
6,415,542	B1	7/2002	Bates et al.	6,520,971	B1	2/2003	Perry et al.
6,416,486	B1	7/2002	Wampler	6,520,972	B2	2/2003	Peters
6,416,509	B1	7/2002	Goble et al.	6,522,101	B2	2/2003	Malackowski
6,419,695	B1	7/2002	Gabbay	6,524,180	B1	2/2003	Simms et al.
6,423,079	B1	7/2002	Blake, III	6,525,499	B2	2/2003	Naganuma
6,424,885	B1	7/2002	Niemeyer et al.	6,527,782	B2	3/2003	Hogg et al.
RE37,814	E	8/2002	Allgeyer	6,527,785	B2	3/2003	Sancoff et al.
6,428,070	B1	8/2002	Takanashi et al.	6,530,942	B2	3/2003	Fogarty et al.
6,428,487	B1	8/2002	Burdorff et al.	6,532,958	B1	3/2003	Buan et al.
6,429,611	B1	8/2002	Li	6,533,157	B1	3/2003	Whitman
6,430,298	B1	8/2002	Kettl et al.	6,533,723	B1	3/2003	Lockery et al.
6,432,065	B1	8/2002	Burdorff et al.	6,533,784	B2	3/2003	Truckai et al.
6,436,097	B1	8/2002	Nardella	6,535,764	B2	3/2003	Imran et al.
6,436,107	B1	8/2002	Wang et al.	6,539,297	B2	3/2003	Weiberle et al.
6,436,110	B2	8/2002	Bowman et al.	D473,239	S	4/2003	Cockerill
6,436,115	B1	8/2002	Beaupre	6,539,816	B2	4/2003	Kogiso et al.
6,436,122	B1	8/2002	Frank et al.	6,540,737	B2	4/2003	Bacher et al.
6,439,439	B1	8/2002	Rickard et al.	6,543,456	B1	4/2003	Freeman
6,439,446	B1	8/2002	Perry et al.	6,545,384	B1	4/2003	Pelrine et al.
6,440,146	B2	8/2002	Nicholas et al.	6,547,786	B1	4/2003	Goble
6,441,577	B2	8/2002	Blumenkranz et al.	6,550,546	B2	4/2003	Thurler et al.
D462,758	S	9/2002	Epstein et al.	6,551,333	B2	4/2003	Kuhns et al.
6,443,973	B1	9/2002	Whitman	6,554,861	B2	4/2003	Knox et al.
6,445,530	B1	9/2002	Baker	6,555,770	B2	4/2003	Kawase
6,447,518	B1	9/2002	Krause et al.	6,558,378	B2	5/2003	Sherman et al.
6,447,523	B1	9/2002	Middleman et al.	6,558,379	B1	5/2003	Batchelor et al.
6,447,799	B1	9/2002	Ullman	6,558,429	B2	5/2003	Taylor
6,447,864	B2	9/2002	Johnson et al.	6,561,187	B2	5/2003	Schmidt et al.
6,450,391	B1	9/2002	Kayan et al.	6,565,560	B1	5/2003	Goble et al.
6,450,989	B2	9/2002	Dubrul et al.	6,566,619	B2	5/2003	Gillman et al.
6,454,781	B1	9/2002	Witt et al.	6,569,085	B2	5/2003	Kortenbach et al.
6,457,625	B1	10/2002	Tormala et al.	6,569,171	B2	5/2003	DeGuillebon et al.
6,458,077	B1	10/2002	Boebel et al.	6,578,751	B2	6/2003	Hartwick
6,458,147	B1	10/2002	Cruise et al.	6,582,364	B2	6/2003	Butler et al.
6,460,627	B1	10/2002	Below et al.	6,582,427	B1	6/2003	Goble et al.
6,468,275	B1	10/2002	Wampler et al.	6,582,441	B1	6/2003	He et al.
6,468,286	B2	10/2002	Mastri et al.	6,583,533	B2	6/2003	Pelrine et al.
6,471,106	B1	10/2002	Reining	6,585,144	B2	7/2003	Adams et al.
6,471,659	B2	10/2002	Eggers et al.	6,585,664	B2	7/2003	Burdorff et al.
6,478,210	B2	11/2002	Adams et al.	6,586,898	B2	7/2003	King et al.
6,482,200	B2	11/2002	Shippert	6,587,750	B2	7/2003	Gerbi et al.
6,482,217	B1	11/2002	Pintor et al.	6,588,277	B2	7/2003	Giordano et al.
6,485,490	B2	11/2002	Wampler et al.	6,588,643	B2	7/2003	Bolduc et al.
6,485,503	B2	11/2002	Jacobs et al.	6,588,931	B2	7/2003	Betzner et al.
6,485,667	B1	11/2002	Tan	6,589,118	B1	7/2003	Soma et al.
6,486,286	B1	11/2002	McGall et al.	6,589,164	B1	7/2003	Flaherty
6,488,196	B1	12/2002	Fenton, Jr.	6,592,538	B1	7/2003	Hotchkiss et al.
6,488,197	B1	12/2002	Whitman	6,592,597	B2	7/2003	Grant et al.
6,488,659	B1	12/2002	Rosenman	6,594,552	B1	7/2003	Nowlin et al.
6,491,201	B1	12/2002	Whitman	6,596,296	B1	7/2003	Nelson et al.
6,491,690	B1	12/2002	Goble et al.	6,596,304	B1	7/2003	Bayon et al.
6,491,701	B2	12/2002	Tierney et al.	6,596,432	B2	7/2003	Kawakami et al.
6,491,702	B2	12/2002	Heilbrun et al.	6,599,295	B1	7/2003	Tornier et al.
6,492,785	B1	12/2002	Kasten et al.	6,599,323	B2	7/2003	Melican et al.
6,494,882	B1	12/2002	Lebouitz et al.	D478,665	S	8/2003	Isaacs et al.
6,494,885	B1	12/2002	Dhindsa	D478,986	S	8/2003	Johnston et al.
6,494,888	B1	12/2002	Laufer et al.	6,601,749	B2	8/2003	Sullivan et al.
6,494,896	B1	12/2002	D'Alessio et al.	6,602,252	B2	8/2003	Mollenauer
6,498,480	B1	12/2002	Manara	6,602,262	B2	8/2003	Griego et al.
6,500,176	B1	12/2002	Truckai et al.	6,603,050	B2	8/2003	Heaton
				6,605,078	B2	8/2003	Adams
				6,605,669	B2	8/2003	Awokola et al.
				6,605,911	B1	8/2003	Klesing
				6,607,475	B2	8/2003	Doyle et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

6,611,793	B1	8/2003	Burnside et al.	6,722,552	B2	4/2004	Fenton, Jr.
6,613,069	B2	9/2003	Boyd et al.	6,723,087	B2	4/2004	O'Neill et al.
6,616,686	B2	9/2003	Coleman et al.	6,723,091	B2	4/2004	Goble et al.
6,619,529	B2	9/2003	Green et al.	6,723,109	B2	4/2004	Solingen
6,620,111	B2	9/2003	Stephens et al.	6,726,697	B2	4/2004	Nicholas et al.
6,620,161	B2	9/2003	Schulze et al.	6,726,706	B2	4/2004	Dominguez
6,620,166	B1	9/2003	Wenstrom, Jr. et al.	6,729,119	B2	5/2004	Schnipke et al.
6,625,517	B1	9/2003	Bogdanov et al.	6,731,976	B2	5/2004	Penn et al.
6,626,834	B2	9/2003	Dunne et al.	6,736,825	B2	5/2004	Blatter et al.
H002086	H	10/2003	Amsler	6,736,854	B2	5/2004	Vadurro et al.
6,629,630	B2	10/2003	Adams	6,740,030	B2	5/2004	Martone et al.
6,629,974	B2	10/2003	Penny et al.	6,743,230	B2	6/2004	Lutze et al.
6,629,988	B2	10/2003	Weadock	6,744,385	B2	6/2004	Kazuya et al.
6,635,838	B1	10/2003	Kornelson	6,747,121	B2	6/2004	Gogolewski
6,636,412	B2	10/2003	Smith	6,747,300	B2	6/2004	Nadd et al.
6,638,108	B2	10/2003	Tachi	6,749,560	B1	6/2004	Konstorum et al.
6,638,285	B2	10/2003	Gabbay	6,749,600	B1	6/2004	Levy
6,638,297	B1	10/2003	Huitema	6,752,768	B2	6/2004	Burdorff et al.
RE38,335	E	11/2003	Aust et al.	6,752,816	B2	6/2004	Culp et al.
6,641,528	B2	11/2003	Torii	6,754,959	B1	6/2004	Guiette, III et al.
6,644,532	B2	11/2003	Green et al.	6,755,195	B1	6/2004	Lemke et al.
6,645,201	B1	11/2003	Uitley et al.	6,755,338	B2	6/2004	Hahnen et al.
6,646,307	B1	11/2003	Yu et al.	6,755,843	B2	6/2004	Chung et al.
6,648,816	B2	11/2003	Irion et al.	6,756,705	B2	6/2004	Pulford, Jr.
6,648,901	B2	11/2003	Fleischman et al.	6,758,846	B2	7/2004	Goble et al.
6,652,595	B1	11/2003	Nicolo	6,761,685	B2	7/2004	Adams et al.
D484,243	S	12/2003	Ryan et al.	6,762,339	B1	7/2004	Klun et al.
D484,595	S	12/2003	Ryan et al.	6,764,445	B2	7/2004	Ramans et al.
D484,596	S	12/2003	Ryan et al.	6,766,957	B2	7/2004	Matsuura et al.
6,656,177	B2	12/2003	Truckai et al.	6,767,352	B2	7/2004	Field et al.
6,656,193	B2	12/2003	Grant et al.	6,767,356	B2	7/2004	Kanner et al.
6,659,940	B2	12/2003	Adler	6,769,590	B2	8/2004	Vresh et al.
6,660,008	B1	12/2003	Foerster et al.	6,769,594	B2	8/2004	Orban, III
6,663,623	B1	12/2003	Oyama et al.	6,770,027	B2	8/2004	Banik et al.
6,663,641	B1	12/2003	Kovac et al.	6,770,070	B1	8/2004	Balbierz
6,666,854	B1	12/2003	Lange	6,770,072	B1	8/2004	Truckai et al.
6,666,875	B1	12/2003	Sakurai et al.	6,770,078	B2	8/2004	Bonutti
6,667,825	B2	12/2003	Lu et al.	6,773,409	B2	8/2004	Truckai et al.
6,669,073	B2	12/2003	Milliman et al.	6,773,437	B2	8/2004	Ogilvie et al.
6,670,806	B2	12/2003	Wendt et al.	6,773,438	B1	8/2004	Knodel et al.
6,671,185	B2	12/2003	Duval	6,775,575	B2	8/2004	Bommannan et al.
D484,977	S	1/2004	Ryan et al.	6,777,838	B2	8/2004	Miekka et al.
6,676,660	B2	1/2004	Wampler et al.	6,780,151	B2	8/2004	Grabover et al.
6,677,687	B2	1/2004	Ho et al.	6,780,180	B1	8/2004	Goble et al.
6,679,269	B2	1/2004	Swanson	6,783,524	B2	8/2004	Anderson et al.
6,679,410	B2	1/2004	Wursch et al.	6,786,382	B1	9/2004	Hoffman
6,681,978	B2	1/2004	Geiste et al.	6,786,864	B2	9/2004	Matsuura et al.
6,681,979	B2	1/2004	Whitman	6,786,896	B1	9/2004	Madhani et al.
6,682,527	B2	1/2004	Strul	6,788,018	B1	9/2004	Blumenkranz
6,682,528	B2	1/2004	Frazier et al.	6,790,173	B2	9/2004	Saadat et al.
6,682,544	B2	1/2004	Mastri et al.	6,793,652	B1	9/2004	Whitman et al.
6,685,698	B2	2/2004	Morley et al.	6,793,661	B2	9/2004	Hamilton et al.
6,685,727	B2	2/2004	Fisher et al.	6,793,663	B2	9/2004	Kneifel et al.
6,689,153	B1	2/2004	Skiba	6,793,669	B2	9/2004	Nakamura et al.
6,692,507	B2	2/2004	Pugsley et al.	6,796,921	B1	9/2004	Buck et al.
6,692,692	B2	2/2004	Stetzel	6,799,669	B2	10/2004	Fukumura et al.
6,695,198	B2	2/2004	Adams et al.	6,802,822	B1	10/2004	Dodge
6,695,199	B2	2/2004	Whitman	6,802,843	B2	10/2004	Truckai et al.
6,695,774	B2	2/2004	Hale et al.	6,802,844	B2	10/2004	Ferree
6,695,849	B2	2/2004	Michelson	6,805,273	B2	10/2004	Bilotti et al.
6,696,814	B2	2/2004	Henderson et al.	6,806,808	B1	10/2004	Watters et al.
6,697,048	B2	2/2004	Rosenberg et al.	6,808,525	B2	10/2004	Latterell et al.
6,698,643	B2	3/2004	Whitman	6,810,359	B2	10/2004	Sakaguchi
6,699,177	B1	3/2004	Wang et al.	6,814,154	B2	11/2004	Chou
6,699,214	B2	3/2004	Gellman	6,814,741	B2	11/2004	Bowman et al.
6,699,235	B2	3/2004	Wallace et al.	6,817,508	B1	11/2004	Racenet et al.
6,704,210	B1	3/2004	Myers	6,817,509	B2	11/2004	Geiste et al.
6,705,503	B1	3/2004	Pedicini et al.	6,817,974	B2	11/2004	Cooper et al.
6,709,445	B2	3/2004	Boebel et al.	6,818,018	B1	11/2004	Sawhney
6,712,773	B1	3/2004	Viola	6,820,791	B2	11/2004	Adams
6,716,223	B2	4/2004	Leopold et al.	6,821,273	B2	11/2004	Mollenauer
6,716,232	B1	4/2004	Vidal et al.	6,821,282	B2	11/2004	Perry et al.
6,716,233	B1	4/2004	Whitman	6,821,284	B2	11/2004	Sturtz et al.
6,720,734	B2	4/2004	Norris	6,827,246	B2	12/2004	Sullivan et al.
6,722,550	B1	4/2004	Ricordi et al.	6,827,712	B2	12/2004	Tovey et al.
				6,827,725	B2	12/2004	Batchelor et al.
				6,828,902	B2	12/2004	Casden
				6,830,174	B2	12/2004	Hillstead et al.
				6,831,629	B2	12/2004	Nishino et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

6,832,998 B2	12/2004	Goble	6,932,810 B2	8/2005	Ryan
6,834,001 B2	12/2004	Myono	6,936,042 B2	8/2005	Wallace et al.
6,835,173 B2	12/2004	Couvillon, Jr.	6,936,948 B2	8/2005	Bell et al.
6,835,199 B2	12/2004	McGuckin, Jr. et al.	D509,297 S	9/2005	Wells
6,835,336 B2	12/2004	Watt	D509,589 S	9/2005	Wells
6,836,611 B2	12/2004	Popovic et al.	6,938,706 B2	9/2005	Ng
6,837,846 B2	1/2005	Jaffe et al.	6,939,358 B2	9/2005	Palacios et al.
6,837,883 B2	1/2005	Moll et al.	6,942,662 B2	9/2005	Goble et al.
6,838,493 B2	1/2005	Williams et al.	6,942,674 B2	9/2005	Belef et al.
6,840,423 B2	1/2005	Adams et al.	6,945,444 B2	9/2005	Gresham et al.
6,840,938 B1	1/2005	Morley et al.	6,945,981 B2	9/2005	Donofrio et al.
6,841,967 B2	1/2005	Kim et al.	6,951,562 B2	10/2005	Zwirnmann
6,843,403 B2	1/2005	Whitman	6,953,138 B1	10/2005	Dworak et al.
6,843,789 B2	1/2005	Goble	6,953,139 B2	10/2005	Milliman et al.
6,843,793 B2	1/2005	Brock et al.	6,953,461 B2	10/2005	McClurken et al.
6,846,307 B2	1/2005	Whitman et al.	6,957,758 B2	10/2005	Aranyi
6,846,308 B2	1/2005	Whitman et al.	6,958,035 B2	10/2005	Friedman et al.
6,846,309 B2	1/2005	Whitman et al.	6,959,851 B2	11/2005	Heinrich
6,847,190 B2	1/2005	Schaefer et al.	6,959,852 B2	11/2005	Shelton, IV et al.
6,849,071 B2	2/2005	Whitman et al.	6,960,107 B1	11/2005	Schaub et al.
6,850,817 B1	2/2005	Green	6,960,163 B2	11/2005	Ewers et al.
6,852,122 B2	2/2005	Rush	6,960,220 B2	11/2005	Marino et al.
6,852,330 B2	2/2005	Bowman et al.	6,962,587 B2	11/2005	Johnson et al.
6,853,879 B2	2/2005	Sunaoshi	6,963,792 B1	11/2005	Green
6,858,005 B2	2/2005	Ohline et al.	6,964,363 B2	11/2005	Wales et al.
6,859,882 B2	2/2005	Fung	6,966,907 B2	11/2005	Goble
RE38,708 E	3/2005	Bolanos et al.	6,966,909 B2	11/2005	Marshall et al.
D502,994 S	3/2005	Blake, III	6,968,908 B2	11/2005	Tokunaga et al.
6,861,142 B1	3/2005	Wilkie et al.	6,969,385 B2	11/2005	Moreyra
6,861,954 B2	3/2005	Levin	6,969,395 B2	11/2005	Eskuri
6,863,668 B2	3/2005	Gillespie et al.	6,971,988 B2	12/2005	Orban, III
6,863,694 B1	3/2005	Boyce et al.	6,972,199 B2	12/2005	Lebouitz et al.
6,863,924 B2	3/2005	Ranganathan et al.	6,974,435 B2	12/2005	Daw et al.
6,866,178 B2	3/2005	Adams et al.	6,974,462 B2	12/2005	Sater
6,866,668 B2	3/2005	Giannetti et al.	6,978,921 B2	12/2005	Shelton, IV et al.
6,866,671 B2	3/2005	Tierney et al.	6,978,922 B2	12/2005	Bilotti et al.
6,867,248 B1	3/2005	Martin et al.	6,981,628 B2	1/2006	Wales
6,869,430 B2	3/2005	Balbierz et al.	6,981,941 B2	1/2006	Whitman et al.
6,869,435 B2	3/2005	Blake, III	6,981,978 B2	1/2006	Gannoe
6,872,214 B2	3/2005	Sonnenschein et al.	6,984,203 B2	1/2006	Tartaglia et al.
6,874,669 B2	4/2005	Adams et al.	6,984,231 B2	1/2006	Goble et al.
6,877,647 B2	4/2005	Green et al.	6,986,451 B1	1/2006	Mastri et al.
6,878,106 B1	4/2005	Herrmann	6,988,649 B2	1/2006	Shelton, IV et al.
6,884,392 B2	4/2005	Malkin et al.	6,988,650 B2	1/2006	Schwemberger et al.
6,884,428 B2	4/2005	Binette et al.	6,989,034 B2	1/2006	Hammer et al.
6,886,730 B2	5/2005	Fujisawa et al.	6,990,731 B2	1/2006	Haytayan
6,887,710 B2	5/2005	Call et al.	6,990,796 B2	1/2006	Schnipke et al.
6,889,116 B2	5/2005	Jinno	6,993,200 B2	1/2006	Tastl et al.
6,893,435 B2	5/2005	Goble	6,993,413 B2	1/2006	Sunaoshi
6,894,140 B2	5/2005	Roby	6,994,708 B2	2/2006	Manzo
6,895,176 B2	5/2005	Archer et al.	6,995,729 B2	2/2006	Govari et al.
6,899,538 B2	5/2005	Matoba	6,996,433 B2	2/2006	Burbank et al.
6,899,593 B1	5/2005	Moeller et al.	6,997,931 B2	2/2006	Sauer et al.
6,899,915 B2	5/2005	Yelick et al.	6,997,935 B2	2/2006	Anderson et al.
6,905,057 B2	6/2005	Swayze et al.	6,998,736 B2	2/2006	Lee et al.
6,905,497 B2	6/2005	Truckai et al.	6,998,816 B2	2/2006	Wieck et al.
6,905,498 B2	6/2005	Hooven	7,000,818 B2	2/2006	Shelton, IV et al.
6,908,472 B2	6/2005	Wiener et al.	7,000,819 B2	2/2006	Swayze et al.
6,911,033 B2	6/2005	de Guillebon et al.	7,000,911 B2	2/2006	McCormick et al.
6,911,916 B1	6/2005	Wang et al.	7,001,380 B2	2/2006	Goble
6,913,579 B2	7/2005	Truckai et al.	7,001,408 B2	2/2006	Knodel et al.
6,913,608 B2	7/2005	Liddicoat et al.	7,004,174 B2	2/2006	Eggers et al.
6,913,613 B2	7/2005	Schwarz et al.	7,007,176 B2	2/2006	Goodfellow et al.
6,921,397 B2	7/2005	Corcoran et al.	7,008,433 B2	3/2006	Voellmicke et al.
6,921,412 B1	7/2005	Black et al.	7,008,435 B2	3/2006	Cummins
6,923,093 B2	8/2005	Ullah	7,009,039 B2	3/2006	Yayon et al.
6,923,803 B2	8/2005	Goble	7,011,657 B2	3/2006	Truckai et al.
6,923,819 B2	8/2005	Meade et al.	7,014,640 B2	3/2006	Kemppainen et al.
6,925,849 B2	8/2005	Jairam	7,018,357 B2	3/2006	Emmons
6,926,716 B2	8/2005	Baker et al.	7,018,390 B2	3/2006	Turovskiy et al.
6,928,902 B1	8/2005	Eyssallenne	7,021,669 B1	4/2006	Lindermeir et al.
6,929,641 B2	8/2005	Goble et al.	7,022,131 B1	4/2006	Derowe et al.
6,929,644 B2	8/2005	Truckai et al.	7,023,159 B2	4/2006	Gorti et al.
6,931,830 B2	8/2005	Liao	7,025,064 B2	4/2006	Wang et al.
6,932,218 B2	8/2005	Kosann et al.	7,025,732 B2	4/2006	Thompson et al.
			7,025,743 B2	4/2006	Mann et al.
			7,025,774 B2	4/2006	Freeman et al.
			7,025,775 B2	4/2006	Gadberry et al.
			7,028,570 B2	4/2006	Ohta et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

7,029,435 B2	4/2006	Nakao	7,104,741 B2	9/2006	Krohn
7,029,439 B2	4/2006	Roberts et al.	7,108,695 B2	9/2006	Witt et al.
7,030,904 B2	4/2006	Adair et al.	7,108,701 B2	9/2006	Evens et al.
7,032,798 B2	4/2006	Whitman et al.	7,108,709 B2	9/2006	Cummins
7,032,799 B2	4/2006	Viola et al.	7,111,768 B2	9/2006	Cummins et al.
7,033,356 B2	4/2006	Latterell et al.	7,111,769 B2	9/2006	Wales et al.
7,035,716 B2	4/2006	Harris et al.	7,112,214 B2	9/2006	Peterson et al.
7,035,762 B2	4/2006	Menard et al.	RE39,358 E	10/2006	Goble
7,036,680 B1	5/2006	Flannery	7,114,642 B2	10/2006	Whitman
7,037,314 B2	5/2006	Armstrong	7,116,100 B1	10/2006	Mock et al.
7,037,344 B2	5/2006	Kagan et al.	7,118,020 B2	10/2006	Lee et al.
7,041,088 B2	5/2006	Nawrocki et al.	7,118,528 B1	10/2006	Piskun
7,041,102 B2	5/2006	Truckai et al.	7,118,563 B2	10/2006	Weckwerth et al.
7,041,868 B2	5/2006	Greene et al.	7,118,582 B1	10/2006	Wang et al.
7,043,852 B2	5/2006	Hayashida et al.	7,119,534 B2	10/2006	Butzmann
7,044,350 B2	5/2006	Kameyama et al.	7,121,446 B2	10/2006	Arad et al.
7,044,352 B2	5/2006	Shelton, IV et al.	7,121,773 B2	10/2006	Mikiya et al.
7,044,353 B2	5/2006	Mastri et al.	7,122,028 B2	10/2006	Looper et al.
7,046,082 B2	5/2006	Komiya et al.	7,125,403 B2	10/2006	Julian et al.
7,048,165 B2	5/2006	Haramiishi	7,125,409 B2	10/2006	Truckai et al.
7,048,687 B1	5/2006	Reuss et al.	7,126,303 B2	10/2006	Farritor et al.
7,048,745 B2	5/2006	Tierney et al.	7,126,879 B2	10/2006	Snyder
7,052,454 B2	5/2006	Taylor	7,128,253 B2	10/2006	Mastri et al.
7,052,494 B2	5/2006	Goble et al.	7,128,254 B2	10/2006	Shelton, IV et al.
7,052,499 B2	5/2006	Steger et al.	7,128,748 B2	10/2006	Mooradian et al.
7,055,730 B2	6/2006	Ehrenfels et al.	7,131,445 B2	11/2006	Amoah
7,055,731 B2	6/2006	Shelton, IV et al.	7,133,601 B2	11/2006	Phillips et al.
7,056,284 B2	6/2006	Martone et al.	7,134,364 B2	11/2006	Kageler et al.
7,056,330 B2	6/2006	Gayton	7,134,587 B2	11/2006	Schwemberger et al.
7,059,331 B2	6/2006	Adams et al.	7,135,027 B2	11/2006	Delmotte
7,059,508 B2	6/2006	Shelton, IV et al.	7,137,980 B2	11/2006	Buyse et al.
7,063,671 B2	6/2006	Couvillon, Jr.	7,137,981 B2	11/2006	Long
7,063,712 B2	6/2006	Vargas et al.	7,139,016 B2	11/2006	Squilla et al.
7,064,509 B1	6/2006	Fu et al.	7,140,527 B2	11/2006	Ehrenfels et al.
7,066,879 B2	6/2006	Fowler et al.	7,140,528 B2	11/2006	Shelton, IV
7,066,944 B2	6/2006	Laufer et al.	7,141,055 B2	11/2006	Abrams et al.
7,067,038 B2	6/2006	Trokhan et al.	7,143,923 B2	12/2006	Shelton, IV et al.
7,070,083 B2	7/2006	Jankowski	7,143,924 B2	12/2006	Scirica et al.
7,070,559 B2	7/2006	Adams et al.	7,143,925 B2	12/2006	Shelton, IV et al.
7,070,597 B2	7/2006	Truckai et al.	7,143,926 B2	12/2006	Shelton, IV et al.
7,071,287 B2	7/2006	Rhine et al.	7,146,191 B2	12/2006	Kerner et al.
7,075,770 B1	7/2006	Smith	7,147,138 B2	12/2006	Shelton, IV
7,077,856 B2	7/2006	Whitman	7,147,139 B2	12/2006	Schwemberger et al.
7,080,769 B2	7/2006	Vresh et al.	7,147,140 B2	12/2006	Wukusick et al.
7,081,114 B2	7/2006	Rashidi	7,147,637 B2	12/2006	Goble
7,083,073 B2	8/2006	Yoshie et al.	7,147,648 B2	12/2006	Lin
7,083,075 B2	8/2006	Swayze et al.	7,147,650 B2	12/2006	Lee
7,083,571 B2	8/2006	Wang et al.	7,150,748 B2	12/2006	Ebbutt et al.
7,083,615 B2	8/2006	Peterson et al.	7,153,300 B2	12/2006	Goble
7,083,619 B2	8/2006	Truckai et al.	7,153,314 B2	12/2006	Laufer et al.
7,083,620 B2	8/2006	Jahns et al.	7,155,316 B2	12/2006	Sutherland et al.
7,083,626 B2	8/2006	Hart et al.	7,156,863 B2	1/2007	Sonnenschein et al.
7,086,267 B2	8/2006	Dworak et al.	7,159,750 B2	1/2007	Racenet et al.
7,087,049 B2	8/2006	Nowlin et al.	7,160,296 B2	1/2007	Pearson et al.
7,087,054 B2	8/2006	Truckai et al.	7,160,299 B2	1/2007	Baily
7,087,071 B2	8/2006	Nicholas et al.	7,161,036 B2	1/2007	Oikawa et al.
7,090,637 B2	8/2006	Danitz et al.	7,161,580 B2	1/2007	Bailey et al.
7,090,673 B2	8/2006	Dycus et al.	7,162,758 B2	1/2007	Skinner
7,090,683 B2	8/2006	Brock et al.	7,163,563 B2	1/2007	Schwartz et al.
7,090,684 B2	8/2006	McGuckin, Jr. et al.	7,166,133 B2	1/2007	Evans et al.
7,091,191 B2	8/2006	Laredo et al.	7,168,604 B2	1/2007	Milliman et al.
7,091,412 B2	8/2006	Wang et al.	7,170,910 B2	1/2007	Chen et al.
7,093,492 B2	8/2006	Treiber et al.	7,171,279 B2	1/2007	Buckingham et al.
7,094,202 B2	8/2006	Nobis et al.	7,172,104 B2	2/2007	Scirica et al.
7,094,247 B2	8/2006	Monassevitch et al.	7,172,593 B2	2/2007	Trieu et al.
7,094,916 B2	8/2006	DeLuca et al.	7,172,615 B2	2/2007	Morriess et al.
7,096,972 B2	8/2006	Orozco, Jr.	7,174,202 B2	2/2007	Bladen et al.
7,097,089 B2	8/2006	Marczyk	7,174,636 B2	2/2007	Lowe
7,097,644 B2	8/2006	Long	7,177,533 B2	2/2007	McFarlin et al.
7,097,650 B2	8/2006	Weller et al.	7,179,223 B2	2/2007	Motoki et al.
7,098,794 B2	8/2006	Lindsay et al.	7,179,267 B2	2/2007	Nolan et al.
7,100,949 B2	9/2006	Williams et al.	7,182,239 B1	2/2007	Myers
7,101,187 B1	9/2006	Deconinck et al.	7,182,763 B2	2/2007	Nardella
7,101,371 B2	9/2006	Dycus et al.	7,183,737 B2	2/2007	Kitagawa
7,101,394 B2	9/2006	Hamm et al.	7,187,960 B2	3/2007	Abreu
			7,188,758 B2	3/2007	Viola et al.
			7,189,207 B2	3/2007	Viola
			7,190,147 B2	3/2007	Gileff et al.
			7,193,199 B2	3/2007	Jang

(56)

References Cited

U.S. PATENT DOCUMENTS

7,195,627 B2	3/2007	Amoah et al.	7,296,724 B2	11/2007	Green et al.
7,196,911 B2	3/2007	Takano et al.	7,297,149 B2	11/2007	Vitali et al.
D541,418 S	4/2007	Schechter et al.	7,300,373 B2	11/2007	Jinno et al.
7,199,537 B2	4/2007	Okamura et al.	7,300,431 B2	11/2007	Dubrovsky
7,199,545 B2	4/2007	Oleynikov et al.	7,300,450 B2	11/2007	Vleugels et al.
7,202,576 B1	4/2007	Dechene et al.	7,303,106 B2	12/2007	Milliman et al.
7,202,653 B2	4/2007	Pai	7,303,107 B2	12/2007	Milliman et al.
7,204,404 B2	4/2007	Nguyen et al.	7,303,108 B2	12/2007	Shelton, IV
7,204,835 B2	4/2007	Latterell et al.	7,303,502 B2	12/2007	Thompson
7,206,626 B2	4/2007	Quaid, III	7,303,556 B2	12/2007	Metzger
7,207,233 B2	4/2007	Wadge	7,306,597 B2	12/2007	Manzo
7,207,471 B2	4/2007	Heinrich et al.	7,308,998 B2	12/2007	Mastri et al.
7,207,472 B2	4/2007	Wukusick et al.	7,311,238 B2	12/2007	Liu
7,207,556 B2	4/2007	Saitoh et al.	7,313,430 B2	12/2007	Urquhart et al.
7,208,005 B2	4/2007	Frecker et al.	7,314,473 B2	1/2008	Jinno et al.
7,210,609 B2	5/2007	Leiboff et al.	7,322,859 B2	1/2008	Evans
7,211,081 B2	5/2007	Goble	7,322,975 B2	1/2008	Goble et al.
7,211,084 B2	5/2007	Goble et al.	7,322,994 B2	1/2008	Nicholas et al.
7,211,092 B2	5/2007	Hughett	7,324,572 B2	1/2008	Chang
7,211,979 B2	5/2007	Khatib et al.	7,326,203 B2	2/2008	Papineau et al.
7,213,736 B2	5/2007	Wales et al.	7,326,213 B2	2/2008	Benderev et al.
7,214,224 B2	5/2007	Goble	7,328,828 B2	2/2008	Ortiz et al.
7,215,517 B2	5/2007	Takamatsu	7,328,829 B2	2/2008	Arad et al.
7,217,285 B2	5/2007	Vargas et al.	7,330,004 B2	2/2008	DeJonge et al.
7,220,260 B2	5/2007	Fleming et al.	7,331,340 B2	2/2008	Barney
7,220,272 B2	5/2007	Weadock	7,331,343 B2	2/2008	Schmidt et al.
7,225,959 B2	6/2007	Patton et al.	7,331,403 B2	2/2008	Berry et al.
7,225,963 B2	6/2007	Scirica	7,331,406 B2	2/2008	Wottreng, Jr. et al.
7,225,964 B2	6/2007	Mastri et al.	7,331,969 B1	2/2008	Inganas et al.
7,226,450 B2	6/2007	Athanasiou et al.	7,334,717 B2	2/2008	Rethy et al.
7,228,505 B2	6/2007	Shimazu et al.	7,334,718 B2	2/2008	McAlister et al.
7,229,408 B2	6/2007	Douglas et al.	7,335,199 B2	2/2008	Goble et al.
7,234,624 B2	6/2007	Gresham et al.	7,335,401 B2	2/2008	Finke et al.
7,235,072 B2	6/2007	Sartor et al.	7,336,045 B2	2/2008	Clermonts
7,235,089 B1	6/2007	McGuckin, Jr.	7,336,048 B2	2/2008	Lohr
7,235,302 B2	6/2007	Jing et al.	7,336,184 B2	2/2008	Smith et al.
7,237,708 B1	7/2007	Guy et al.	7,337,774 B2	3/2008	Webb
7,238,195 B2	7/2007	Viola	7,338,505 B2	3/2008	Belson
7,238,901 B2	7/2007	Kim et al.	7,338,513 B2	3/2008	Lee et al.
7,239,657 B1	7/2007	Gunnarsson	7,341,554 B2	3/2008	Sekine et al.
7,241,288 B2	7/2007	Braun	7,341,555 B2	3/2008	Ootawara et al.
7,241,289 B2	7/2007	Braun	7,341,591 B2	3/2008	Grinberg
7,246,734 B2	7/2007	Shelton, IV	7,343,920 B2	3/2008	Toby et al.
7,247,161 B2	7/2007	Johnston et al.	7,344,532 B2	3/2008	Goble et al.
7,249,267 B2	7/2007	Chapuis	7,344,533 B2	3/2008	Pearson et al.
7,252,641 B2	8/2007	Thompson et al.	7,346,344 B2	3/2008	Fontaine
7,252,660 B2	8/2007	Kunz	7,346,406 B2	3/2008	Brotto et al.
7,255,012 B2	8/2007	Hedtke	7,348,763 B1	3/2008	Reinhart et al.
7,255,696 B2	8/2007	Goble et al.	7,348,875 B2	3/2008	Hughes et al.
7,256,695 B2	8/2007	Hamel et al.	RE40,237 E	4/2008	Bilotti et al.
7,258,262 B2	8/2007	Mastri et al.	7,351,258 B2	4/2008	Ricotta et al.
7,258,546 B2	8/2007	Beier et al.	7,354,447 B2	4/2008	Shelton, IV et al.
7,260,431 B2	8/2007	Libbus et al.	7,354,502 B2	4/2008	Polat et al.
7,265,374 B2	9/2007	Lee et al.	7,357,287 B2	4/2008	Shelton, IV et al.
7,267,677 B2	9/2007	Johnson et al.	7,357,806 B2	4/2008	Rivera et al.
7,267,679 B2	9/2007	McGuckin, Jr. et al.	7,361,168 B2	4/2008	Makower et al.
7,272,002 B2	9/2007	Drapeau	7,361,195 B2	4/2008	Schwartz et al.
7,273,483 B2	9/2007	Wiener et al.	7,362,062 B2	4/2008	Schneider et al.
D552,623 S *	10/2007	Vong D14/487	7,364,060 B2	4/2008	Milliman
7,275,674 B2	10/2007	Racenet et al.	7,364,061 B2	4/2008	Swayze et al.
7,276,044 B2	10/2007	Ferry et al.	7,367,485 B2	5/2008	Shelton, IV et al.
7,276,068 B2	10/2007	Johnson et al.	7,368,124 B2	5/2008	Chun et al.
7,278,562 B2	10/2007	Mastri et al.	7,371,210 B2	5/2008	Brock et al.
7,278,563 B1	10/2007	Green	7,371,403 B2	5/2008	McCarthy et al.
7,278,949 B2	10/2007	Bader	7,375,493 B2	5/2008	Calhoon et al.
7,278,994 B2	10/2007	Goble	7,377,918 B2	5/2008	Amoah
7,282,048 B2	10/2007	Goble et al.	7,377,928 B2	5/2008	Zubik et al.
7,283,096 B2	10/2007	Geisheimer et al.	7,378,817 B2	5/2008	Calhoon et al.
7,286,850 B2	10/2007	Frielink et al.	RE40,388 E	6/2008	Gines
7,287,682 B1	10/2007	Ezzat et al.	7,380,695 B2	6/2008	Doll et al.
7,289,139 B2	10/2007	Amling et al.	7,380,696 B2	6/2008	Shelton, IV et al.
7,293,685 B2	11/2007	Ehrenfels et al.	7,384,403 B2	6/2008	Sherman
7,295,893 B2	11/2007	Sunaoshi	7,384,417 B2	6/2008	Cucin
7,295,907 B2	11/2007	Lu et al.	7,386,365 B2	6/2008	Nixon
7,296,722 B2	11/2007	Ivanko	7,386,730 B2	6/2008	Uchikubo
			7,388,217 B2	6/2008	Buschbeck et al.
			7,388,484 B2	6/2008	Hsu
			7,391,173 B2	6/2008	Schena
			7,394,190 B2	7/2008	Huang

(56)

References Cited

U.S. PATENT DOCUMENTS

7,396,356 B2	7/2008	Mollenauer	7,476,237 B2	1/2009	Taniguchi et al.
7,397,364 B2	7/2008	Govari	7,479,608 B2	1/2009	Smith
7,398,707 B2	7/2008	Morley et al.	7,481,347 B2	1/2009	Roy
7,398,907 B2	7/2008	Racenet et al.	7,481,348 B2	1/2009	Marczyk
7,398,908 B2	7/2008	Holsten et al.	7,481,349 B2	1/2009	Holsten et al.
7,400,107 B2	7/2008	Schneider et al.	7,481,824 B2	1/2009	Boudreaux et al.
7,400,752 B2	7/2008	Zacharias	7,485,124 B2	2/2009	Kuhns et al.
7,401,000 B2	7/2008	Nakamura	7,485,133 B2	2/2009	Cannon et al.
7,401,721 B2	7/2008	Holsten et al.	7,485,142 B2	2/2009	Milo
7,404,449 B2	7/2008	Birmingham et al.	7,487,899 B2	2/2009	Shelton, IV et al.
7,404,508 B2	7/2008	Smith et al.	7,489,055 B2	2/2009	Jeong et al.
7,404,509 B2	7/2008	Ortiz et al.	7,490,749 B2	2/2009	Schall et al.
7,404,822 B2	7/2008	Viart et al.	7,491,232 B2	2/2009	Bolduc et al.
7,407,074 B2	8/2008	Ortiz et al.	7,494,039 B2	2/2009	Racenet et al.
7,407,075 B2	8/2008	Holsten et al.	7,494,460 B2	2/2009	Haarstad et al.
7,407,076 B2	8/2008	Racenet et al.	7,494,499 B2	2/2009	Nagase et al.
7,407,077 B2	8/2008	Ortiz et al.	7,494,501 B2	2/2009	Ahlberg et al.
7,407,078 B2	8/2008	Shelton, IV et al.	7,500,979 B2	3/2009	Hueil et al.
7,408,310 B2	8/2008	Hong et al.	7,501,198 B2	3/2009	Barlev et al.
7,410,085 B2	8/2008	Wolf et al.	7,503,474 B2	3/2009	Hillstead et al.
7,410,086 B2	8/2008	Ortiz et al.	7,506,790 B2	3/2009	Shelton, IV
7,410,483 B2	8/2008	Danitz et al.	7,506,791 B2	3/2009	Omaits et al.
7,413,563 B2	8/2008	Corcoran et al.	7,507,202 B2	3/2009	Schoellhorn
7,416,101 B2	8/2008	Shelton, IV et al.	7,510,107 B2	3/2009	Timm et al.
7,418,078 B2	8/2008	Blanz et al.	7,510,534 B2	3/2009	Burdorff et al.
RE40,514 E	9/2008	Mastri et al.	7,510,566 B2	3/2009	Jacobs et al.
7,419,080 B2	9/2008	Smith et al.	7,513,407 B1	4/2009	Chang
7,419,081 B2	9/2008	Ehrenfels et al.	7,513,408 B2	4/2009	Shelton, IV et al.
7,419,321 B2	9/2008	Tereschouk	7,517,356 B2	4/2009	Heinrich
7,419,495 B2	9/2008	Menn et al.	7,524,320 B2	4/2009	Tierney et al.
7,422,136 B1	9/2008	Marczyk	7,527,632 B2	5/2009	Houghton et al.
7,422,138 B2	9/2008	Bilotti et al.	7,530,984 B2	5/2009	Sonnenschein et al.
7,422,139 B2	9/2008	Shelton, IV et al.	7,530,985 B2	5/2009	Takemoto et al.
7,424,965 B2	9/2008	Racenet et al.	7,533,906 B2	5/2009	Luetgten et al.
7,427,607 B2	9/2008	Suzuki	7,534,259 B2	5/2009	Lashinski et al.
D578,644 S	10/2008	Shumer et al.	7,540,867 B2	6/2009	Jinno et al.
7,430,772 B2	10/2008	Van Es	7,540,872 B2	6/2009	Schechter et al.
7,431,188 B1	10/2008	Marczyk	7,542,807 B2	6/2009	Bertolero et al.
7,431,189 B2	10/2008	Shelton, IV et al.	7,543,730 B1	6/2009	Marczyk
7,431,230 B2	10/2008	McPherson et al.	7,546,939 B2	6/2009	Adams et al.
7,431,694 B2	10/2008	Stefanchik et al.	7,546,940 B2	6/2009	Milliman et al.
7,431,730 B2	10/2008	Viola	7,547,287 B2	6/2009	Boecker et al.
7,434,715 B2	10/2008	Shelton, IV et al.	7,547,312 B2	6/2009	Bauman et al.
7,434,717 B2	10/2008	Shelton, IV et al.	7,549,563 B2	6/2009	Mather et al.
7,435,249 B2	10/2008	Buyse et al.	7,549,564 B2	6/2009	Boudreaux
7,438,209 B1	10/2008	Hess et al.	7,549,998 B2	6/2009	Braun
7,438,718 B2	10/2008	Milliman et al.	7,552,854 B2	6/2009	Wixey et al.
7,439,354 B2	10/2008	Lenges et al.	7,553,173 B2	6/2009	Kowalick
7,441,684 B2	10/2008	Shelton, IV et al.	7,553,275 B2	6/2009	Padgett et al.
7,441,685 B1	10/2008	Boudreaux	7,554,343 B2	6/2009	Bromfield
7,442,201 B2	10/2008	Pugsley et al.	7,556,185 B2	7/2009	Viola
7,443,547 B2	10/2008	Moreno et al.	7,556,186 B2	7/2009	Milliman
7,446,131 B1	11/2008	Liu et al.	7,556,647 B2	7/2009	Drews et al.
7,448,525 B2	11/2008	Shelton, IV et al.	7,559,449 B2	7/2009	Viola
7,450,010 B1	11/2008	Gravelle et al.	7,559,450 B2	7/2009	Wales et al.
7,451,904 B2	11/2008	Shelton, IV	7,559,452 B2	7/2009	Wales et al.
7,455,208 B2	11/2008	Wales et al.	7,559,937 B2	7/2009	de la Torre et al.
7,455,676 B2	11/2008	Holsten et al.	7,561,637 B2	7/2009	Jonsson et al.
7,455,682 B2	11/2008	Viola	7,562,910 B2	7/2009	Kertesz et al.
D582,934 S	12/2008	Byeon	7,563,269 B2	7/2009	Hashiguchi
7,461,767 B2	12/2008	Viola et al.	7,563,862 B2	7/2009	Sieg et al.
7,462,187 B2	12/2008	Johnston et al.	7,565,993 B2	7/2009	Milliman et al.
7,464,845 B2	12/2008	Chou	7,566,300 B2	7/2009	Devierre et al.
7,464,846 B2	12/2008	Shelton, IV et al.	7,567,045 B2	7/2009	Fristedt
7,464,847 B2	12/2008	Viola et al.	7,568,603 B2	8/2009	Shelton, IV et al.
7,464,848 B2	12/2008	Green et al.	7,568,604 B2	8/2009	Ehrenfels et al.
7,464,849 B2	12/2008	Shelton, IV et al.	7,568,619 B2	8/2009	Todd et al.
7,467,740 B2	12/2008	Shelton, IV et al.	7,575,144 B2	8/2009	Ortiz et al.
7,467,849 B2	12/2008	Silverbrook et al.	7,578,825 B2	8/2009	Huebner
7,472,814 B2	1/2009	Mastri et al.	D600,712 S	9/2009	LaManna et al.
7,472,815 B2	1/2009	Shelton, IV et al.	7,583,063 B2	9/2009	Dooley
7,472,816 B2	1/2009	Holsten et al.	7,584,880 B2	9/2009	Racenet et al.
7,473,221 B2	1/2009	Ewers et al.	7,586,289 B2	9/2009	Andruk et al.
7,473,253 B2	1/2009	Dycus et al.	7,588,174 B2	9/2009	Holsten et al.
7,473,263 B2	1/2009	Johnston et al.	7,588,175 B2	9/2009	Timm et al.
			7,588,176 B2	9/2009	Timm et al.
			7,588,177 B2	9/2009	Racenet
			7,591,783 B2	9/2009	Boulais et al.
			7,591,818 B2	9/2009	Bertolero et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

7,593,766 B2	9/2009	Faber et al.	7,682,686 B2	3/2010	Curro et al.
7,595,642 B2	9/2009	Doyle	7,686,201 B2	3/2010	Csiky
7,597,229 B2	10/2009	Boudreaux et al.	7,686,804 B2	3/2010	Johnson et al.
7,597,230 B2	10/2009	Racenet et al.	7,686,826 B2	3/2010	Lee et al.
7,597,693 B2	10/2009	Garrison	7,688,028 B2	3/2010	Phillips et al.
7,597,699 B2	10/2009	Rogers	7,691,098 B2	4/2010	Wallace et al.
7,598,972 B2	10/2009	Tomita	7,691,103 B2	4/2010	Fernandez et al.
7,600,663 B2	10/2009	Green	7,691,106 B2	4/2010	Schenberger et al.
7,604,118 B2	10/2009	Iio et al.	7,694,864 B2	4/2010	Okada et al.
7,604,150 B2	10/2009	Boudreaux	7,694,865 B2	4/2010	Scirica
7,604,151 B2	10/2009	Hess et al.	7,695,485 B2	4/2010	Whitman et al.
7,604,668 B2	10/2009	Farnsworth et al.	7,695,493 B2	4/2010	Saadat et al.
7,607,557 B2	10/2009	Shelton, IV et al.	7,699,204 B2	4/2010	Viola
7,608,091 B2	10/2009	Goldfarb et al.	7,699,835 B2	4/2010	Lee et al.
D604,325 S	11/2009	Ebeling et al.	7,699,844 B2	4/2010	Utley et al.
7,611,038 B2	11/2009	Racenet et al.	7,699,846 B2	4/2010	Ryan
7,611,474 B2	11/2009	Hibner et al.	7,699,856 B2	4/2010	Van Wyk et al.
7,615,003 B2	11/2009	Stefanchik et al.	7,699,859 B2	4/2010	Bombard et al.
7,615,006 B2	11/2009	Abe	7,699,860 B2	4/2010	Huitema et al.
7,615,067 B2	11/2009	Lee et al.	7,699,868 B2	4/2010	Frank et al.
7,617,961 B2	11/2009	Viola	7,703,653 B2	4/2010	Shah et al.
D605,201 S	12/2009	Lorenz et al.	7,705,559 B2	4/2010	Powell et al.
D607,010 S	12/2009	Kocmick	7,708,180 B2	5/2010	Murray et al.
7,624,902 B2	12/2009	Marczyk et al.	7,708,181 B2	5/2010	Cole et al.
7,624,903 B2	12/2009	Green et al.	7,708,182 B2	5/2010	Viola
7,625,370 B2	12/2009	Hart et al.	7,708,758 B2	5/2010	Lee et al.
7,630,841 B2	12/2009	Comisky et al.	7,712,182 B2	5/2010	Zeiler et al.
7,631,793 B2	12/2009	Rethy et al.	7,713,190 B2	5/2010	Brock et al.
7,631,794 B2	12/2009	Rethy et al.	7,713,542 B2	5/2010	Xu et al.
7,635,074 B2	12/2009	Olson et al.	7,714,239 B2	5/2010	Smith
7,635,922 B2	12/2009	Becker	7,714,334 B2	5/2010	Lin
7,637,409 B2	12/2009	Marczyk	7,717,312 B2	5/2010	Beetel
7,637,410 B2	12/2009	Marczyk	7,717,313 B2	5/2010	Criscuolo et al.
7,638,958 B2	12/2009	Philipp et al.	7,717,846 B2	5/2010	Zirps et al.
7,641,091 B2	1/2010	Olson et al.	7,717,873 B2	5/2010	Swick
7,641,092 B2	1/2010	Kruszynski et al.	7,717,915 B2	5/2010	Miyazawa
7,641,093 B2	1/2010	Doll et al.	7,717,926 B2	5/2010	Whitfield et al.
7,641,095 B2	1/2010	Viola	7,718,180 B2	5/2010	Karp
7,641,671 B2	1/2010	Crainich	7,718,556 B2	5/2010	Matsuda et al.
7,644,783 B2	1/2010	Roberts et al.	7,721,930 B2	5/2010	McKenna et al.
7,644,848 B2	1/2010	Swayze et al.	7,721,931 B2	5/2010	Shelton, IV et al.
7,645,230 B2	1/2010	Mikkaichi et al.	7,721,933 B2	5/2010	Ehrenfels et al.
7,648,055 B2	1/2010	Marczyk	7,721,934 B2	5/2010	Shelton, IV et al.
7,648,457 B2	1/2010	Stefanchik et al.	7,721,936 B2	5/2010	Shalton, IV et al.
7,648,519 B2	1/2010	Lee et al.	7,722,527 B2	5/2010	Bouchier et al.
7,650,185 B2	1/2010	Maile et al.	7,722,607 B2	5/2010	Dumbauld et al.
7,651,017 B2	1/2010	Ortiz et al.	7,722,610 B2	5/2010	Viola et al.
7,651,498 B2	1/2010	Shiffrin et al.	7,725,214 B2	5/2010	Diolaiti
7,654,431 B2	2/2010	Hueil et al.	7,726,171 B2	6/2010	Langlotz et al.
7,655,004 B2	2/2010	Long	7,726,537 B2	6/2010	Olson et al.
7,655,288 B2	2/2010	Bauman et al.	7,726,538 B2	6/2010	Holsten et al.
7,655,584 B2	2/2010	Biran et al.	7,726,539 B2	6/2010	Holsten et al.
7,656,131 B2	2/2010	Embrey et al.	7,727,954 B2	6/2010	McKay
7,658,311 B2	2/2010	Boudreaux	7,728,553 B2	6/2010	Carrier et al.
7,658,312 B2	2/2010	Vidal et al.	7,729,742 B2	6/2010	Govari
7,658,705 B2	2/2010	Melvin et al.	7,731,072 B2	6/2010	Timm et al.
7,659,219 B2	2/2010	Biran et al.	7,731,073 B2	6/2010	Wixey et al.
7,661,448 B2	2/2010	Kim et al.	7,731,724 B2	6/2010	Huitema et al.
7,662,161 B2	2/2010	Briganti et al.	7,735,703 B2	6/2010	Morgan et al.
7,665,646 B2	2/2010	Prommersberger	7,736,254 B2	6/2010	Schena
7,665,647 B2	2/2010	Shelton, IV et al.	7,736,306 B2	6/2010	Brustad et al.
7,666,195 B2	2/2010	Kelleher et al.	7,736,374 B2	6/2010	Vaughan et al.
7,669,746 B2	3/2010	Shelton, IV	7,738,971 B2	6/2010	Swayze et al.
7,669,747 B2	3/2010	Weisenburgh, II et al.	7,740,159 B2	6/2010	Shelton, IV et al.
7,670,334 B2	3/2010	Hueil et al.	7,742,036 B2	6/2010	Grant et al.
7,673,780 B2	3/2010	Shelton, IV et al.	7,743,960 B2	6/2010	Whitman et al.
7,673,781 B2	3/2010	Swayze et al.	7,744,624 B2	6/2010	Bettuchi
7,673,782 B2	3/2010	Hess et al.	7,744,627 B2	6/2010	Orban, III et al.
7,673,783 B2	3/2010	Morgan et al.	7,744,628 B2	6/2010	Viola
7,674,253 B2	3/2010	Fisher et al.	7,747,146 B2	6/2010	Milano et al.
7,674,255 B2	3/2010	Braun	7,748,587 B2	7/2010	Haramiishi et al.
7,674,263 B2	3/2010	Ryan	7,748,632 B2	7/2010	Coleman et al.
7,674,270 B2	3/2010	Layer	7,749,204 B2	7/2010	Dhanaraj et al.
7,682,307 B2	3/2010	Danitz et al.	7,751,870 B2	7/2010	Whitman
7,682,367 B2	3/2010	Shah et al.	7,753,245 B2	7/2010	Boudreaux et al.
			7,753,246 B2	7/2010	Scirica
			7,753,904 B2	7/2010	Shelton, IV et al.
			7,757,924 B2	7/2010	Gerbi et al.
			7,758,594 B2	7/2010	Lamson et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

7,758,612 B2	7/2010	Shipp	7,837,079 B2	11/2010	Holsten et al.
7,762,462 B2	7/2010	Gelbman	7,837,080 B2	11/2010	Schwemberger
7,762,998 B2	7/2010	Birk et al.	7,837,081 B2	11/2010	Holsten et al.
7,766,207 B2	8/2010	Mather et al.	7,837,425 B2	11/2010	Saeki et al.
7,766,209 B2	8/2010	Baxter, III et al.	7,837,685 B2	11/2010	Weinberg et al.
7,766,210 B2	8/2010	Shelton, IV et al.	7,837,687 B2	11/2010	Harp
7,766,821 B2	8/2010	Brunnen et al.	7,837,694 B2	11/2010	Tethrake et al.
7,766,894 B2	8/2010	Weitzner et al.	7,838,789 B2	11/2010	Stoffers et al.
7,770,658 B2	8/2010	Ito et al.	7,839,109 B2	11/2010	Carmen, Jr. et al.
7,770,773 B2	8/2010	Whitman et al.	7,841,503 B2	11/2010	Sonnenschein et al.
7,770,774 B2	8/2010	Mastri et al.	7,842,025 B2	11/2010	Coleman et al.
7,770,775 B2	8/2010	Shelton, IV et al.	7,842,028 B2	11/2010	Lee
7,770,776 B2	8/2010	Chen et al.	7,843,158 B2	11/2010	Prisco
7,771,396 B2	8/2010	Stefanchik et al.	7,845,533 B2	12/2010	Marczyk et al.
7,772,720 B2	8/2010	McGee et al.	7,845,534 B2	12/2010	Viola et al.
7,772,725 B2	8/2010	Siman-Tov	7,845,535 B2	12/2010	Scircia
7,775,972 B2	8/2010	Brock et al.	7,845,536 B2	12/2010	Viola et al.
7,776,037 B2	8/2010	Odom	7,845,537 B2	12/2010	Shelton, IV et al.
7,776,060 B2	8/2010	Mooradian et al.	7,845,538 B2	12/2010	Whitman
7,776,065 B2	8/2010	Griffiths et al.	7,846,085 B2	12/2010	Silverman et al.
7,778,004 B2	8/2010	Nerheim et al.	7,846,149 B2	12/2010	Jankowski
7,779,737 B2	8/2010	Newman, Jr. et al.	7,848,066 B2	12/2010	Yanagishima
7,780,054 B2	8/2010	Wales	7,850,623 B2	12/2010	Griffin et al.
7,780,055 B2	8/2010	Scirica et al.	7,850,642 B2	12/2010	Moll et al.
7,780,309 B2	8/2010	McMillan et al.	7,850,982 B2	12/2010	Stopek et al.
7,780,663 B2	8/2010	Yates et al.	7,853,813 B2	12/2010	Lee
7,780,685 B2	8/2010	Hunt et al.	7,854,735 B2	12/2010	Houser et al.
7,784,662 B2	8/2010	Wales et al.	7,854,736 B2	12/2010	Ryan
7,784,663 B2	8/2010	Shelton, IV	7,857,183 B2	12/2010	Shelton, IV
7,787,256 B2	8/2010	Chan et al.	7,857,184 B2	12/2010	Viola
7,789,283 B2	9/2010	Shah	7,857,185 B2	12/2010	Swayze et al.
7,789,875 B2	9/2010	Brock et al.	7,857,186 B2	12/2010	Baxter, III et al.
7,789,883 B2	9/2010	Takashino et al.	7,857,813 B2	12/2010	Schmitz et al.
7,789,889 B2	9/2010	Zubik et al.	7,861,906 B2	1/2011	Doll et al.
7,793,812 B2	9/2010	Moore et al.	7,862,502 B2	1/2011	Pool et al.
7,794,475 B2	9/2010	Hess et al.	7,862,546 B2	1/2011	Conlon et al.
7,798,386 B2	9/2010	Schall et al.	7,862,579 B2	1/2011	Ortiz et al.
7,799,039 B2	9/2010	Shelton, IV et al.	7,866,525 B2	1/2011	Scirica
7,799,044 B2	9/2010	Johnston et al.	7,866,527 B2	1/2011	Hall et al.
7,799,965 B2	9/2010	Patel et al.	7,866,528 B2	1/2011	Olson et al.
7,803,151 B2	9/2010	Whitman	7,870,989 B2	1/2011	Viola et al.
7,806,871 B2	10/2010	Li et al.	7,871,418 B2	1/2011	Thompson et al.
7,806,891 B2	10/2010	Nowlin et al.	7,871,440 B2	1/2011	Schwartz et al.
7,810,690 B2	10/2010	Bilotti et al.	7,875,055 B2	1/2011	Cichocki, Jr.
7,810,691 B2	10/2010	Boyden et al.	7,879,063 B2	2/2011	Khosravi
7,810,692 B2	10/2010	Hall et al.	7,879,070 B2	2/2011	Ortiz et al.
7,810,693 B2	10/2010	Broehl et al.	7,883,461 B2	2/2011	Albrecht et al.
7,811,275 B2	10/2010	Birk et al.	7,883,465 B2	2/2011	Donofrio et al.
7,814,816 B2	10/2010	Alberti et al.	7,886,951 B2	2/2011	Hessler
7,815,092 B2	10/2010	Whitman et al.	7,886,952 B2	2/2011	Scirica et al.
7,815,565 B2	10/2010	Stefanchik et al.	7,887,530 B2	2/2011	Zemlok et al.
7,815,662 B2	10/2010	Spivey et al.	7,887,535 B2	2/2011	Lands et al.
7,819,296 B2	10/2010	Hueil et al.	7,887,536 B2	2/2011	Johnson et al.
7,819,297 B2	10/2010	Doll et al.	7,887,563 B2	2/2011	Cummins
7,819,298 B2	10/2010	Hall et al.	7,891,531 B1	2/2011	Ward
7,819,299 B2	10/2010	Shelton, IV et al.	7,891,532 B2	2/2011	Mastri et al.
7,819,799 B2	10/2010	Merril et al.	7,892,200 B2	2/2011	Birk et al.
7,819,884 B2	10/2010	Lee et al.	7,892,245 B2	2/2011	Liddicoat et al.
7,819,885 B2	10/2010	Cooper	7,893,586 B2	2/2011	West et al.
7,819,886 B2	10/2010	Whitfield et al.	7,896,214 B2	3/2011	Farascioni
7,823,592 B2	11/2010	Bettuchi et al.	7,896,215 B2	3/2011	Adams et al.
7,823,760 B2	11/2010	Zemlok et al.	7,896,869 B2	3/2011	DiSilvestro et al.
7,824,401 B2	11/2010	Manzo et al.	7,896,877 B2	3/2011	Hall et al.
7,824,422 B2	11/2010	Benchetrit	7,896,895 B2	3/2011	Boudreaux et al.
7,824,426 B2	11/2010	Racenet et al.	7,896,897 B2	3/2011	Gresham et al.
7,828,189 B2	11/2010	Holsten et al.	7,896,900 B2	3/2011	Frank et al.
7,828,794 B2	11/2010	Sartor	7,898,198 B2	3/2011	Murphree
7,828,808 B2	11/2010	Hinman et al.	7,900,805 B2	3/2011	Shelton, IV et al.
7,831,292 B2	11/2010	Quaid et al.	7,900,806 B2	3/2011	Chen et al.
7,832,408 B2	11/2010	Shelton, IV et al.	7,901,381 B2	3/2011	Birk et al.
7,832,611 B2	11/2010	Boyden et al.	7,905,380 B2	3/2011	Shelton, IV et al.
7,832,612 B2	11/2010	Baxter, III et al.	7,905,381 B2	3/2011	Baxter, III et al.
7,833,234 B2	11/2010	Bailly et al.	7,905,881 B2	3/2011	Masuda et al.
7,835,823 B2	11/2010	Sillman et al.	7,905,889 B2	3/2011	Catanese, III et al.
7,836,400 B2	11/2010	May et al.	7,905,890 B2	3/2011	Whitfield et al.
			7,905,902 B2	3/2011	Huitema et al.
			7,909,039 B2	3/2011	Hur
			7,909,191 B2	3/2011	Baker et al.
			7,909,220 B2	3/2011	Viola

(56)

References Cited

U.S. PATENT DOCUMENTS

7,909,221 B2	3/2011	Viola et al.	7,976,213 B2	7/2011	Bertolotti et al.
7,909,224 B2	3/2011	Prommersberger	7,976,563 B2	7/2011	Summerer
7,913,891 B2	3/2011	Doll et al.	7,979,137 B2	7/2011	Tracey et al.
7,913,893 B2	3/2011	Mastri et al.	7,980,443 B2	7/2011	Scheib et al.
7,914,521 B2	3/2011	Wang et al.	7,981,132 B2	7/2011	Dubrul et al.
7,914,543 B2	3/2011	Roth et al.	7,987,405 B2	7/2011	Turner et al.
7,914,551 B2	3/2011	Ortiz et al.	7,988,015 B2	8/2011	Mason, II et al.
7,918,230 B2	4/2011	Whitman et al.	7,988,026 B2	8/2011	Knodel et al.
7,918,376 B1	4/2011	Knodel et al.	7,988,027 B2	8/2011	Olson et al.
7,918,377 B2	4/2011	Measamer et al.	7,988,028 B2	8/2011	Farascioni et al.
7,918,845 B2	4/2011	Saadat et al.	7,988,779 B2	8/2011	Disalvo et al.
7,918,848 B2	4/2011	Lau et al.	7,992,757 B2	8/2011	Wheeler et al.
7,918,861 B2	4/2011	Brock et al.	7,993,360 B2	8/2011	Hacker et al.
7,918,867 B2	4/2011	Dana et al.	7,994,670 B2	8/2011	Ji
7,922,061 B2	4/2011	Shelton, IV et al.	7,997,054 B2	8/2011	Bertsch et al.
7,922,063 B2	4/2011	Zemlok et al.	7,997,468 B2	8/2011	Farascioni
7,922,743 B2	4/2011	Heinrich et al.	7,997,469 B2	8/2011	Olson et al.
7,923,144 B2	4/2011	Kohn et al.	8,002,696 B2	8/2011	Suzuki
7,926,691 B2	4/2011	Viola et al.	8,002,784 B2	8/2011	Jinno et al.
7,927,328 B2	4/2011	Orszulak et al.	8,002,785 B2	8/2011	Weiss et al.
7,928,281 B2	4/2011	Augustine	8,002,795 B2	8/2011	Beetel
7,930,040 B1	4/2011	Kelsch et al.	8,006,365 B2	8/2011	Levin et al.
7,930,065 B2	4/2011	Larkin et al.	8,006,885 B2	8/2011	Marczyk
7,931,660 B2	4/2011	Aranyi et al.	8,006,889 B2	8/2011	Adams et al.
7,931,695 B2	4/2011	Ringeisen	8,007,370 B2	8/2011	Hirsch et al.
7,931,877 B2	4/2011	Steffens et al.	8,007,465 B2	8/2011	Birk et al.
7,934,630 B2	5/2011	Shelton, IV et al.	8,007,479 B2	8/2011	Birk et al.
7,934,631 B2	5/2011	Balbierz et al.	8,007,511 B2	8/2011	Brock et al.
7,934,896 B2	5/2011	Schnier	8,007,513 B2	8/2011	Nalagatla et al.
7,935,130 B2	5/2011	Williams	8,008,598 B2	8/2011	Whitman et al.
7,935,773 B2	5/2011	Hadba et al.	8,010,180 B2	8/2011	Quaid et al.
7,936,142 B2	5/2011	Otsuka et al.	8,011,550 B2	9/2011	Aranyi et al.
7,938,307 B2	5/2011	Bettuchi	8,011,551 B2	9/2011	Marczyk et al.
7,941,865 B2	5/2011	Seman, Jr. et al.	8,011,553 B2	9/2011	Mastri et al.
7,942,303 B2	5/2011	Shah	8,011,555 B2	9/2011	Tarinelli et al.
7,942,890 B2	5/2011	D'Agostino et al.	8,012,170 B2	9/2011	Whitman et al.
7,944,175 B2	5/2011	Mori et al.	8,016,176 B2	9/2011	Kasvikis et al.
7,945,792 B2	5/2011	Cherpantier	8,016,177 B2	9/2011	Bettuchi et al.
7,945,798 B2	5/2011	Carlson et al.	8,016,178 B2	9/2011	Olson et al.
7,946,453 B2	5/2011	Voegele et al.	8,016,849 B2	9/2011	Wenchell
7,947,011 B2	5/2011	Birk et al.	8,016,855 B2	9/2011	Whitman et al.
7,950,560 B2	5/2011	Zemlok et al.	8,016,858 B2	9/2011	Whitman
7,950,561 B2	5/2011	Aranyi	8,016,881 B2	9/2011	Furst
7,951,071 B2	5/2011	Whitman et al.	8,020,742 B2	9/2011	Marczyk
7,951,166 B2	5/2011	Orban, III et al.	8,020,743 B2	9/2011	Shelton, IV
7,954,682 B2	6/2011	Giordano et al.	8,021,375 B2	9/2011	Aldrich et al.
7,954,684 B2	6/2011	Boudreaux	8,025,199 B2	9/2011	Whitman et al.
7,954,685 B2	6/2011	Viola	8,025,896 B2	9/2011	Malaviya et al.
7,954,686 B2	6/2011	Baxter, III et al.	8,028,882 B2	10/2011	Viola
7,954,687 B2	6/2011	Zemlok et al.	8,028,883 B2	10/2011	Stopek
7,955,253 B2	6/2011	Ewers et al.	8,028,884 B2	10/2011	Sniffin et al.
7,955,257 B2	6/2011	Frasier et al.	8,028,885 B2	10/2011	Smith et al.
7,955,322 B2	6/2011	Devengenzo et al.	8,029,510 B2	10/2011	Hoegerle
7,955,327 B2	6/2011	Sartor et al.	8,031,069 B2	10/2011	Cohn et al.
7,955,380 B2	6/2011	Chu et al.	8,033,438 B2	10/2011	Scirica
7,959,050 B2	6/2011	Smith et al.	8,033,439 B2	10/2011	Racenet et al.
7,959,051 B2	6/2011	Smith et al.	8,033,440 B2	10/2011	Wenchell et al.
7,959,052 B2	6/2011	Sonnenschein et al.	8,034,077 B2	10/2011	Smith et al.
7,963,432 B2	6/2011	Knodel et al.	8,034,337 B2	10/2011	Simard
7,963,433 B2	6/2011	Whitman et al.	8,034,363 B2	10/2011	Li et al.
7,963,913 B2	6/2011	Devengenzo et al.	8,035,487 B2	10/2011	Malackowski
7,963,963 B2	6/2011	Francischelli et al.	8,037,591 B2	10/2011	Spivey et al.
7,963,964 B2	6/2011	Santilli et al.	8,038,045 B2	10/2011	Bettuchi et al.
7,964,206 B2	6/2011	Suokas et al.	8,038,046 B2	10/2011	Smith et al.
7,966,236 B2	6/2011	Noriega et al.	8,038,686 B2	10/2011	Huitema et al.
7,966,269 B2	6/2011	Bauer et al.	8,043,207 B2	10/2011	Adams
7,966,799 B2	6/2011	Morgan et al.	8,043,328 B2	10/2011	Hahnen et al.
7,967,178 B2	6/2011	Scirica et al.	8,044,536 B2	10/2011	Nguyen et al.
7,967,179 B2	6/2011	Olson et al.	8,044,604 B2	10/2011	Hagino et al.
7,967,180 B2	6/2011	Scirica	8,047,236 B2	11/2011	Perry
7,967,181 B2	6/2011	Viola et al.	8,048,503 B2	11/2011	Farnsworth et al.
7,967,791 B2	6/2011	Franer et al.	8,052,636 B2	11/2011	Moll et al.
7,967,839 B2	6/2011	Flock et al.	8,056,787 B2	11/2011	Boudreaux et al.
7,972,298 B2	7/2011	Wallace et al.	8,056,788 B2	11/2011	Mastri et al.
7,972,315 B2	7/2011	Birk et al.	8,056,789 B1	11/2011	White et al.
			8,057,508 B2	11/2011	Shelton, IV
			8,058,771 B2	11/2011	Giordano et al.
			8,060,250 B2	11/2011	Reiland et al.
			8,061,014 B2	11/2011	Smith et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

8,061,576	B2	11/2011	Cappola	8,134,306	B2	3/2012	Drader et al.
8,062,236	B2	11/2011	Soltz	8,136,711	B2	3/2012	Beardsley et al.
8,062,330	B2	11/2011	Prommersberger et al.	8,136,712	B2	3/2012	Zingman
8,063,619	B2	11/2011	Zhu et al.	8,136,713	B2	3/2012	Hathaway et al.
8,066,158	B2	11/2011	Vogel et al.	8,137,339	B2	3/2012	Jinno et al.
8,066,166	B2	11/2011	Demmy et al.	8,140,417	B2	3/2012	Shibata
8,066,167	B2	11/2011	Measamer et al.	8,141,762	B2	3/2012	Bedi et al.
8,066,168	B2	11/2011	Vidal et al.	8,141,763	B2	3/2012	Milliman
8,066,720	B2	11/2011	Knodel et al.	8,142,200	B2	3/2012	Crunkilton et al.
D650,074	S	12/2011	Hunt et al.	8,142,425	B2	3/2012	Eggers
D650,789	S	12/2011	Arnold	8,142,461	B2	3/2012	Houser et al.
8,070,033	B2	12/2011	Milliman et al.	8,142,515	B2	3/2012	Therin et al.
8,070,034	B1	12/2011	Knodel	8,143,520	B2	3/2012	Cutler
8,070,035	B2	12/2011	Holsten et al.	8,146,790	B2	4/2012	Milliman
8,070,743	B2	12/2011	Kagan et al.	8,147,421	B2	4/2012	Farquhar et al.
8,074,858	B2	12/2011	Marczyk	8,147,456	B2	4/2012	Fisher et al.
8,074,861	B2	12/2011	Ehrenfels et al.	8,147,485	B2	4/2012	Wham et al.
8,075,476	B2	12/2011	Vargas	8,152,041	B2	4/2012	Kostrzewski
8,075,571	B2	12/2011	Vitali et al.	8,152,756	B2	4/2012	Webster et al.
8,079,950	B2	12/2011	Stern et al.	8,154,239	B2	4/2012	Katsuki et al.
8,079,989	B2	12/2011	Birk et al.	8,157,145	B2	4/2012	Shelton, IV et al.
8,080,004	B2	12/2011	Downey et al.	8,157,148	B2	4/2012	Scirica
8,083,118	B2	12/2011	Milliman et al.	8,157,151	B2	4/2012	Ingmanson et al.
8,083,119	B2	12/2011	Prommersberger	8,157,152	B2	4/2012	Holsten et al.
8,083,120	B2	12/2011	Shelton, IV et al.	8,157,153	B2	4/2012	Shelton, IV et al.
8,084,001	B2	12/2011	Burns et al.	8,157,793	B2	4/2012	Omori et al.
8,084,969	B2	12/2011	David et al.	8,161,977	B2	4/2012	Shelton, IV et al.
8,085,013	B2	12/2011	Wei et al.	8,162,138	B2	4/2012	Bettenhausen et al.
8,087,562	B1	1/2012	Manoux et al.	8,162,197	B2	4/2012	Mastri et al.
8,087,563	B2	1/2012	Milliman et al.	8,162,668	B2	4/2012	Toly
8,089,509	B2	1/2012	Chatenever et al.	8,162,933	B2	4/2012	Francischelli et al.
8,091,753	B2	1/2012	Viola	8,162,965	B2	4/2012	Reschke et al.
8,091,756	B2	1/2012	Viola	8,167,185	B2	5/2012	Shelton, IV et al.
8,092,443	B2	1/2012	Bischoff	8,167,622	B2	5/2012	Zhou
8,092,932	B2	1/2012	Phillips et al.	8,167,895	B2	5/2012	D'Agostino et al.
8,093,572	B2	1/2012	Kuduvalli	8,167,898	B1	5/2012	Schaller et al.
8,096,458	B2	1/2012	Hessler	8,170,241	B2	5/2012	Roe et al.
8,096,459	B2	1/2012	Ortiz et al.	8,172,004	B2	5/2012	Ho
8,097,017	B2	1/2012	Viola	8,172,120	B2	5/2012	Boyden et al.
8,100,310	B2	1/2012	Zemlok	8,172,122	B2	5/2012	Kasvikis et al.
8,100,824	B2	1/2012	Hegeman et al.	8,172,124	B2	5/2012	Shelton, IV et al.
8,100,872	B2	1/2012	Patel	8,177,776	B2	5/2012	Humayun et al.
8,102,138	B2	1/2012	Sekine et al.	8,177,797	B2	5/2012	Shimoji et al.
8,102,278	B2	1/2012	Deck et al.	8,179,705	B2	5/2012	Chapuis
8,105,350	B2	1/2012	Lee et al.	8,180,458	B2	5/2012	Kane et al.
8,107,925	B2	1/2012	Natsuno et al.	8,181,839	B2	5/2012	Beetel
8,108,033	B2	1/2012	Drew et al.	8,181,840	B2	5/2012	Milliman
8,108,072	B2	1/2012	Zhao et al.	8,182,422	B2	5/2012	Bayer et al.
8,109,426	B2	2/2012	Milliman et al.	8,182,444	B2	5/2012	Uber, III et al.
8,110,208	B1	2/2012	Hen	8,183,807	B2	5/2012	Tsai et al.
8,113,405	B2	2/2012	Milliman	8,186,555	B2	5/2012	Shelton, IV et al.
8,113,407	B2	2/2012	Holsten et al.	8,186,556	B2	5/2012	Viola
8,113,408	B2	2/2012	Wenchell et al.	8,186,558	B2	5/2012	Sapienza
8,113,410	B2	2/2012	Hall et al.	8,186,560	B2	5/2012	Hess et al.
8,114,017	B2	2/2012	Bacher	8,191,752	B2	6/2012	Scirica
8,114,100	B2	2/2012	Smith et al.	8,192,350	B2	6/2012	Ortiz et al.
8,118,206	B2	2/2012	Zand et al.	8,192,460	B2	6/2012	Orban, III et al.
8,118,207	B2	2/2012	Racenet et al.	8,192,651	B2	6/2012	Young et al.
8,120,301	B2	2/2012	Goldberg et al.	8,193,129	B2	6/2012	Tagawa et al.
8,122,128	B2	2/2012	Burke, II et al.	8,196,795	B2	6/2012	Moore et al.
8,123,103	B2	2/2012	Milliman	8,196,796	B2	6/2012	Shelton, IV et al.
8,123,523	B2	2/2012	Carron et al.	8,197,501	B2	6/2012	Shadeck et al.
8,123,766	B2	2/2012	Bauman et al.	8,197,502	B2	6/2012	Smith et al.
8,123,767	B2	2/2012	Bauman et al.	8,197,837	B2	6/2012	Jamiolkowski et al.
8,125,168	B2	2/2012	Johnson et al.	8,201,720	B2	6/2012	Hessler
8,127,975	B2	3/2012	Olson et al.	8,201,721	B2	6/2012	Zemlok et al.
8,127,976	B2	3/2012	Scirica et al.	8,202,549	B2	6/2012	Stucky et al.
8,128,624	B2	3/2012	Couture et al.	8,205,779	B2	6/2012	Ma et al.
8,128,643	B2	3/2012	Aranyi et al.	8,205,780	B2	6/2012	Sorrentino et al.
8,128,645	B2	3/2012	Sonnenschein et al.	8,205,781	B2	6/2012	Baxter, III et al.
8,128,662	B2	3/2012	Altarac et al.	8,210,411	B2	7/2012	Yates et al.
8,132,703	B2	3/2012	Milliman et al.	8,210,414	B2	7/2012	Bettuchi et al.
8,132,705	B2	3/2012	Viola et al.	8,210,415	B2	7/2012	Ward
8,132,706	B2	3/2012	Marczyk et al.	8,210,416	B2	7/2012	Milliman et al.
8,133,500	B2	3/2012	Ringeisen et al.	8,210,721	B2	7/2012	Chen et al.
				8,211,125	B2	7/2012	Spivey
				8,214,019	B2	7/2012	Govari et al.
				8,215,531	B2	7/2012	Shelton, IV et al.
				8,215,532	B2	7/2012	Marczyk

(56)

References Cited

U.S. PATENT DOCUMENTS

8,215,533	B2	7/2012	Viola et al.	8,289,403	B2	10/2012	Dobashi et al.
8,220,468	B2	7/2012	Cooper et al.	8,292,147	B2	10/2012	Viola
8,220,688	B2	7/2012	Laurent et al.	8,292,148	B2	10/2012	Viola
8,220,690	B2	7/2012	Hess et al.	8,292,150	B2	10/2012	Bryant
8,221,402	B2	7/2012	Francischelli et al.	8,292,151	B2	10/2012	Viola
8,221,424	B2	7/2012	Cha	8,292,152	B2	10/2012	Milliman et al.
8,221,433	B2	7/2012	Lozier et al.	8,292,155	B2	10/2012	Shelton, IV et al.
8,225,799	B2	7/2012	Bettuchi	8,292,157	B2	10/2012	Smith et al.
8,225,979	B2	7/2012	Farascioni et al.	8,292,158	B2	10/2012	Sapienza
8,226,553	B2	7/2012	Shelton, IV et al.	8,292,801	B2	10/2012	Dejima et al.
8,226,635	B2	7/2012	Petrie et al.	8,292,888	B2	10/2012	Whitman
8,226,675	B2	7/2012	Houser et al.	8,294,399	B2	10/2012	Suzuki et al.
8,226,715	B2	7/2012	Hwang et al.	8,298,161	B2	10/2012	Vargas
8,227,946	B2	7/2012	Kim	8,298,189	B2	10/2012	Fisher et al.
8,228,020	B2	7/2012	Shin et al.	8,298,233	B2	10/2012	Mueller
8,228,048	B2	7/2012	Spencer	8,298,677	B2	10/2012	Wiesner et al.
8,229,549	B2	7/2012	Whitman et al.	8,302,323	B2	11/2012	Fortier et al.
8,231,040	B2	7/2012	Zemlok et al.	8,303,621	B2	11/2012	Miyamoto et al.
8,231,042	B2	7/2012	Hessler et al.	8,308,040	B2	11/2012	Huang et al.
8,231,043	B2	7/2012	Tarinelli et al.	8,308,041	B2	11/2012	Kostrzewski
8,235,272	B2	8/2012	Nicholas et al.	8,308,042	B2	11/2012	Aranyi
8,236,010	B2	8/2012	Ortiz et al.	8,308,043	B2	11/2012	Bindra et al.
8,236,011	B2	8/2012	Harris et al.	8,308,046	B2	11/2012	Prommersberger
8,236,020	B2	8/2012	Smith et al.	8,308,659	B2	11/2012	Scheibe et al.
8,237,388	B2	8/2012	Jinno et al.	8,308,725	B2	11/2012	Bell et al.
8,240,537	B2	8/2012	Marczyk	8,310,188	B2	11/2012	Nakai
8,241,271	B2	8/2012	Millman et al.	8,313,496	B2	11/2012	Sauer et al.
8,241,284	B2	8/2012	Dycus et al.	8,313,499	B2	11/2012	Magnusson et al.
8,241,308	B2	8/2012	Kortenbach et al.	8,313,509	B2	11/2012	Kostrzewski
8,241,322	B2	8/2012	Whitman et al.	8,317,070	B2	11/2012	Hueil et al.
8,245,594	B2	8/2012	Rogers et al.	8,317,071	B1	11/2012	Knodel
8,245,898	B2	8/2012	Smith et al.	8,317,074	B2	11/2012	Ortiz et al.
8,245,899	B2	8/2012	Swensgard et al.	8,317,437	B2	11/2012	Merkley et al.
8,245,900	B2	8/2012	Scirica	8,317,744	B2	11/2012	Kirschenman
8,245,901	B2	8/2012	Stopek	8,317,790	B2	11/2012	Bell et al.
8,246,608	B2	8/2012	Omori et al.	8,319,002	B2	11/2012	Daniels et al.
8,246,637	B2	8/2012	Viola et al.	8,322,455	B2	12/2012	Shelton, IV et al.
8,252,009	B2	8/2012	Weller et al.	8,322,589	B2	12/2012	Boudreaux
8,256,654	B2	9/2012	Bettuchi et al.	8,322,590	B2	12/2012	Patel et al.
8,256,655	B2	9/2012	Sniffin et al.	8,322,901	B2	12/2012	Michelotti
8,256,656	B2	9/2012	Milliman et al.	8,323,789	B2	12/2012	Rozhin et al.
8,257,251	B2	9/2012	Shelton, IV et al.	8,328,061	B2	12/2012	Kasvikis
8,257,356	B2	9/2012	Bleich et al.	8,328,062	B2	12/2012	Viola
8,257,386	B2	9/2012	Lee et al.	8,328,063	B2	12/2012	Milliman et al.
8,257,391	B2	9/2012	Orban, III et al.	8,328,064	B2	12/2012	Racenet et al.
8,257,634	B2	9/2012	Scirica	8,328,802	B2	12/2012	Deville et al.
8,258,745	B2	9/2012	Smith et al.	8,328,823	B2	12/2012	Aranyi et al.
8,261,958	B1	9/2012	Knodel	8,333,313	B2	12/2012	Boudreaux et al.
8,262,560	B2	9/2012	Whitman	8,333,691	B2	12/2012	Schaaf
8,262,655	B2	9/2012	Ghabrial et al.	8,333,764	B2	12/2012	Francischelli et al.
8,267,300	B2	9/2012	Boudreaux	8,333,779	B2	12/2012	Smith et al.
8,267,924	B2	9/2012	Zemlok et al.	8,334,468	B2	12/2012	Palmer et al.
8,267,946	B2	9/2012	Whitfield et al.	8,336,753	B2	12/2012	Olson et al.
8,267,951	B2	9/2012	Whayne et al.	8,336,754	B2	12/2012	Cappola et al.
8,269,121	B2	9/2012	Smith	8,342,377	B2	1/2013	Milliman et al.
8,272,553	B2	9/2012	Mastri et al.	8,342,378	B2	1/2013	Marczyk et al.
8,272,554	B2	9/2012	Whitman et al.	8,342,379	B2	1/2013	Whitman et al.
8,272,918	B2	9/2012	Lam	8,342,380	B2	1/2013	Viola
8,273,404	B2	9/2012	Dave et al.	8,343,150	B2	1/2013	Artale
8,276,801	B2	10/2012	Zemlok et al.	8,347,978	B2	1/2013	Forster et al.
8,276,802	B2	10/2012	Kostrzewski	8,348,118	B2	1/2013	Segura
8,277,473	B2	10/2012	Sunaoshi et al.	8,348,123	B2	1/2013	Scirica et al.
8,281,446	B2	10/2012	Moskovich	8,348,124	B2	1/2013	Scirica
8,281,973	B2	10/2012	Wenchell et al.	8,348,125	B2	1/2013	Viola et al.
8,281,974	B2	10/2012	Hessler et al.	8,348,126	B2	1/2013	Olson et al.
8,282,654	B2	10/2012	Ferrari et al.	8,348,127	B2	1/2013	Marczyk
8,285,367	B2	10/2012	Hyde et al.	8,348,129	B2	1/2013	Bedi et al.
8,286,723	B2	10/2012	Puzio et al.	8,348,130	B2	1/2013	Shah et al.
8,286,845	B2	10/2012	Perry et al.	8,348,131	B2	1/2013	Omaits et al.
8,286,846	B2	10/2012	Smith et al.	8,348,837	B2	1/2013	Wenchell
8,286,847	B2	10/2012	Taylor	8,348,959	B2	1/2013	Wolford et al.
8,287,487	B2	10/2012	Estes	8,348,972	B2	1/2013	Soltz et al.
8,287,522	B2	10/2012	Moses et al.	8,349,987	B2	1/2013	Kapiamba et al.
8,287,561	B2	10/2012	Nunez et al.	8,352,004	B2	1/2013	Mannheimer et al.
8,288,984	B2	10/2012	Yang	8,353,437	B2	1/2013	Boudreaux
				8,353,438	B2	1/2013	Baxter, III et al.
				8,353,439	B2	1/2013	Baxter, III et al.
				8,356,740	B1	1/2013	Knodel
				8,357,144	B2	1/2013	Whitman et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

8,357,158 B2	1/2013	McKenna et al.	8,419,747 B2	4/2013	Hinman et al.
8,357,161 B2	1/2013	Mueller	8,419,754 B2	4/2013	Laby et al.
8,359,174 B2	1/2013	Nakashima et al.	8,423,182 B2	4/2013	Robinson et al.
8,360,296 B2	1/2013	Zingman	8,424,737 B2	4/2013	Scirica
8,360,297 B2	1/2013	Shelton, IV et al.	8,424,739 B2	4/2013	Racenet et al.
8,360,298 B2	1/2013	Farascioni et al.	8,424,740 B2	4/2013	Shelton, IV et al.
8,360,299 B2	1/2013	Zemlok et al.	8,424,741 B2	4/2013	McGuckin, Jr. et al.
8,361,501 B2	1/2013	DiTizio et al.	8,425,600 B2	4/2013	Maxwell
D676,866 S *	2/2013	Chaudhri D14/487	8,427,430 B2	4/2013	Lee et al.
8,365,972 B2	2/2013	Aranyi et al.	8,430,292 B2	4/2013	Patel et al.
8,365,973 B1	2/2013	White et al.	8,430,892 B2	4/2013	Bindra et al.
8,365,975 B1	2/2013	Manoux et al.	8,430,898 B2	4/2013	Wiener et al.
8,365,976 B2	2/2013	Hess et al.	8,435,257 B2	5/2013	Smith et al.
8,366,559 B2	2/2013	Papenfuss et al.	8,439,246 B1	5/2013	Knodel
8,366,719 B2	2/2013	Markey et al.	8,444,036 B2	5/2013	Shelton, IV
8,366,787 B2	2/2013	Brown et al.	8,444,037 B2	5/2013	Nicholas et al.
8,369,056 B2	2/2013	Senriuchi et al.	8,444,549 B2	5/2013	Viola et al.
8,371,393 B2	2/2013	Higuchi et al.	8,449,536 B2	5/2013	Selig
8,371,491 B2	2/2013	Huitema et al.	8,449,560 B2	5/2013	Roth et al.
8,371,492 B2	2/2013	Aranyi et al.	8,453,904 B2	6/2013	Eskaros et al.
8,371,493 B2	2/2013	Aranyi et al.	8,453,906 B2	6/2013	Huang et al.
8,371,494 B2	2/2013	Racenet et al.	8,453,907 B2	6/2013	Laurent et al.
8,372,094 B2	2/2013	Bettuchi et al.	8,453,908 B2	6/2013	Bedi et al.
8,376,865 B2	2/2013	Forster et al.	8,453,912 B2	6/2013	Mastri et al.
8,377,029 B2	2/2013	Nagao et al.	8,453,914 B2	6/2013	Laurent et al.
8,377,044 B2	2/2013	Coe et al.	8,454,495 B2	6/2013	Kawano et al.
8,381,828 B2	2/2013	Whitman et al.	8,454,551 B2	6/2013	Allen et al.
8,382,773 B2	2/2013	Whitfield et al.	8,454,628 B2	6/2013	Smith et al.
8,382,790 B2	2/2013	Uenohara et al.	8,454,640 B2	6/2013	Johnston et al.
D677,273 S	3/2013	Randall et al.	8,457,757 B2	6/2013	Caulier et al.
8,387,848 B2	3/2013	Johnson et al.	8,459,520 B2	6/2013	Giordano et al.
8,388,633 B2	3/2013	Rousseau et al.	8,459,521 B2	6/2013	Zemlok et al.
8,389,588 B2	3/2013	Ringeisen et al.	8,459,524 B2	6/2013	Pribanic et al.
8,393,513 B2	3/2013	Jankowski	8,459,525 B2	6/2013	Yates et al.
8,393,514 B2	3/2013	Shelton, IV et al.	8,464,922 B2	6/2013	Marczyk
8,393,516 B2	3/2013	Kostrzewski	8,464,923 B2	6/2013	Shelton, IV
8,397,832 B2	3/2013	Blickle et al.	8,464,924 B2	6/2013	Gresham et al.
8,397,971 B2	3/2013	Yates et al.	8,464,925 B2	6/2013	Hull et al.
8,397,973 B1	3/2013	Hausen	8,465,475 B2	6/2013	Isbell, Jr.
8,398,633 B2	3/2013	Mueller	8,465,502 B2	6/2013	Zergiebel
8,398,669 B2	3/2013	Kim	8,465,515 B2	6/2013	Drew et al.
8,398,673 B2	3/2013	Hinchliffe et al.	8,469,254 B2	6/2013	Czernik et al.
8,398,674 B2	3/2013	Prestel	8,469,946 B2	6/2013	Sugita
8,400,851 B2	3/2013	Byun	8,469,973 B2	6/2013	Meade et al.
8,403,138 B2	3/2013	Weissaupt et al.	8,470,355 B2	6/2013	Skalla et al.
8,403,195 B2	3/2013	Beardsley et al.	D686,240 S	7/2013	Lin
8,403,196 B2	3/2013	Beardsley et al.	8,474,677 B2	7/2013	Woodard, Jr. et al.
8,403,198 B2	3/2013	Sorrentino et al.	8,475,453 B2	7/2013	Marczyk et al.
8,403,832 B2	3/2013	Cunningham et al.	8,475,454 B1	7/2013	Alshemari
8,403,926 B2	3/2013	Nobis et al.	8,475,474 B2	7/2013	Bombard et al.
8,403,945 B2	3/2013	Whitfield et al.	8,479,968 B2	7/2013	Hodgkinson et al.
8,403,946 B2	3/2013	Whitfield et al.	8,479,969 B2	7/2013	Shelton, IV
8,403,950 B2	3/2013	Palmer et al.	8,480,703 B2	7/2013	Nicholas et al.
8,408,439 B2	4/2013	Huang et al.	8,483,509 B2	7/2013	Matsuzaka
8,408,442 B2	4/2013	Racenet et al.	8,485,412 B2	7/2013	Shelton, IV et al.
8,409,079 B2	4/2013	Okamoto et al.	8,485,413 B2	7/2013	Scheib et al.
8,409,174 B2	4/2013	Omori	8,485,970 B2	7/2013	Widenhouse et al.
8,409,175 B2	4/2013	Lee et al.	8,487,199 B2	7/2013	Palmer et al.
8,409,222 B2	4/2013	Whitfield et al.	8,487,487 B2	7/2013	Dietz et al.
8,409,223 B2	4/2013	Sorrentino et al.	8,490,851 B2	7/2013	Blier et al.
8,411,500 B2	4/2013	Gapihan et al.	8,490,853 B2	7/2013	Criscuolo et al.
8,413,661 B2	4/2013	Rousseau et al.	8,491,581 B2	7/2013	Deville et al.
8,413,870 B2	4/2013	Pastorelli et al.	8,491,603 B2	7/2013	Yeung et al.
8,413,871 B2	4/2013	Racenet et al.	8,496,153 B2	7/2013	Demmy et al.
8,413,872 B2	4/2013	Patel	8,496,154 B2	7/2013	Marczyk et al.
8,414,469 B2	4/2013	Diolaiti	8,496,156 B2	7/2013	Sniffin et al.
8,414,577 B2	4/2013	Boudreaux et al.	8,496,683 B2	7/2013	Prommersberger et al.
8,414,598 B2	4/2013	Brock et al.	8,498,691 B2	7/2013	Moll et al.
8,418,073 B2	4/2013	Mohr et al.	8,499,992 B2	8/2013	Whitman et al.
8,418,906 B2	4/2013	Farascioni et al.	8,499,993 B2	8/2013	Shelton, IV et al.
8,418,907 B2	4/2013	Johnson et al.	8,500,721 B2	8/2013	Jinno
8,418,908 B1	4/2013	Beardsley	8,500,762 B2	8/2013	Sholev et al.
8,418,909 B2	4/2013	Kostrzewski	8,502,091 B2	8/2013	Palmer et al.
8,419,635 B2	4/2013	Shelton, IV et al.	8,505,799 B2	8/2013	Viola et al.
8,419,717 B2	4/2013	Diolaiti et al.	8,505,801 B2	8/2013	Ehrenfels et al.
			8,506,555 B2	8/2013	Ruiz Morales
			8,506,557 B2	8/2013	Zemlok et al.
			8,506,580 B2	8/2013	Zergiebel et al.
			8,506,581 B2	8/2013	Wingardner, III et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

8,511,308 B2	8/2013	Hecox et al.	8,608,044 B2	12/2013	Hueil et al.
8,512,359 B2	8/2013	Whitman et al.	8,608,045 B2	12/2013	Smith et al.
8,512,402 B2	8/2013	Marczyk et al.	8,608,046 B2	12/2013	Laurent et al.
8,517,239 B2	8/2013	Scheib et al.	8,608,745 B2	12/2013	Guzman et al.
8,517,241 B2	8/2013	Nicholas et al.	8,613,383 B2	12/2013	Beckman et al.
8,517,243 B2	8/2013	Giordano et al.	8,616,427 B2	12/2013	Viola
8,517,244 B2	8/2013	Shelton, IV et al.	8,616,431 B2	12/2013	Timm et al.
8,518,024 B2	8/2013	Williams et al.	8,622,274 B2	1/2014	Yates et al.
8,521,273 B2	8/2013	Kliman	8,622,275 B2	1/2014	Baxter, III et al.
8,523,042 B2	9/2013	Masiakos et al.	8,627,993 B2	1/2014	Smith et al.
8,523,043 B2	9/2013	Ullrich et al.	8,627,994 B2	1/2014	Zemlok et al.
8,523,881 B2	9/2013	Cabiri et al.	8,627,995 B2	1/2014	Smith et al.
8,523,900 B2	9/2013	Jinno et al.	8,628,518 B2	1/2014	Blumenkranz et al.
8,529,588 B2	9/2013	Ahlberg et al.	8,628,544 B2	1/2014	Farascioni
8,529,600 B2	9/2013	Woodard, Jr. et al.	8,628,545 B2	1/2014	Cabrera et al.
8,529,819 B2	9/2013	Ostapoff et al.	8,631,987 B2	1/2014	Shelton, IV et al.
8,532,747 B2	9/2013	Nock et al.	8,631,992 B1	1/2014	Hausen et al.
8,534,527 B2	9/2013	Brendel et al.	8,631,993 B2	1/2014	Kostrzewski
8,534,528 B2	9/2013	Shelton, IV	8,632,462 B2	1/2014	Yoo et al.
8,535,304 B2	9/2013	Sklar et al.	8,632,525 B2	1/2014	Kerr et al.
8,535,340 B2	9/2013	Allen	8,632,535 B2	1/2014	Shelton, IV et al.
8,539,866 B2	9/2013	Nayak et al.	8,632,539 B2	1/2014	Twomey et al.
8,540,128 B2	9/2013	Shelton, IV et al.	8,632,563 B2	1/2014	Nagase et al.
8,540,129 B2	9/2013	Baxter, III et al.	8,636,187 B2	1/2014	Hueil et al.
8,540,130 B2	9/2013	Moore et al.	8,636,190 B2	1/2014	Zemlok et al.
8,540,131 B2	9/2013	Swayze	8,636,191 B2	1/2014	Meagher
8,540,133 B2	9/2013	Bedi et al.	8,636,193 B2	1/2014	Whitman et al.
8,540,733 B2	9/2013	Whitman et al.	8,636,736 B2	1/2014	Yates et al.
8,540,735 B2	9/2013	Mitelberg et al.	8,636,766 B2	1/2014	Milliman et al.
8,550,984 B2	10/2013	Takemoto	8,639,936 B2	1/2014	Hu et al.
8,551,076 B2	10/2013	Duval et al.	8,640,788 B2	2/2014	Dachs, II et al.
8,555,660 B2	10/2013	Takenaka et al.	8,646,674 B2	2/2014	Schulte et al.
8,556,151 B2	10/2013	Viola	8,647,258 B2	2/2014	Aranyi et al.
8,556,918 B2	10/2013	Bauman et al.	8,652,120 B2	2/2014	Giordano et al.
8,556,935 B1	10/2013	Knodel et al.	8,652,151 B2	2/2014	Lehman et al.
8,560,147 B2	10/2013	Taylor et al.	8,657,174 B2	2/2014	Yates et al.
8,561,617 B2	10/2013	Lindh et al.	8,657,175 B2	2/2014	Sonnenschein et al.
8,561,870 B2	10/2013	Baxter, III et al.	8,657,176 B2	2/2014	Shelton, IV et al.
8,561,871 B2	10/2013	Rajappa et al.	8,657,177 B2	2/2014	Scirica et al.
8,561,873 B2	10/2013	Ingmanson et al.	8,657,178 B2	2/2014	Hueil et al.
8,562,598 B2	10/2013	Falkenstein et al.	8,657,482 B2	2/2014	Malackowski et al.
8,567,656 B2	10/2013	Shelton, IV et al.	8,657,808 B2	2/2014	McPherson et al.
8,568,416 B2	10/2013	Schmitz et al.	8,657,814 B2	2/2014	Werneth et al.
8,568,425 B2	10/2013	Ross et al.	8,657,821 B2	2/2014	Palermo
D692,916 S	11/2013	Granchi et al.	D701,238 S	3/2014	Lai et al.
8,573,459 B2	11/2013	Smith et al.	8,662,370 B2	3/2014	Takei
8,573,461 B2	11/2013	Shelton, IV et al.	8,663,106 B2	3/2014	Stivoric et al.
8,573,462 B2	11/2013	Smith et al.	8,663,192 B2	3/2014	Hester et al.
8,573,465 B2	11/2013	Shelton, IV	8,663,245 B2	3/2014	Francischelli et al.
8,574,199 B2	11/2013	von Bulow et al.	8,663,262 B2	3/2014	Smith et al.
8,574,263 B2	11/2013	Mueller	8,663,270 B2	3/2014	Donnigan et al.
8,575,880 B2	11/2013	Grantz	8,664,792 B2	3/2014	Rebsdorf
8,575,895 B2	11/2013	Garrastacho et al.	8,668,129 B2	3/2014	Olson
8,579,176 B2	11/2013	Smith et al.	8,668,130 B2	3/2014	Hess et al.
8,579,178 B2	11/2013	Holsten et al.	8,672,206 B2	3/2014	Aranyi et al.
8,579,897 B2	11/2013	Vakharia et al.	8,672,207 B2	3/2014	Shelton, IV et al.
8,579,937 B2	11/2013	Gresham	8,672,208 B2	3/2014	Hess et al.
8,584,919 B2	11/2013	Hueil et al.	8,672,922 B2	3/2014	Loh et al.
8,584,920 B2	11/2013	Hodgkinson	8,672,935 B2	3/2014	Okada et al.
8,584,921 B2	11/2013	Scirica	8,672,951 B2	3/2014	Smith et al.
8,585,583 B2	11/2013	Sakaguchi et al.	8,673,210 B2	3/2014	Deshays
8,585,721 B2	11/2013	Kirsch	8,675,820 B2	3/2014	Baic et al.
8,590,760 B2	11/2013	Cummins et al.	8,678,263 B2	3/2014	Viola
8,590,762 B2	11/2013	Hess et al.	8,678,994 B2	3/2014	Sonnenschein et al.
8,590,764 B2	11/2013	Hartwick et al.	8,679,093 B2	3/2014	Farra
8,596,515 B2	12/2013	Okoniewski	8,679,098 B2	3/2014	Hart
8,597,745 B2	12/2013	Farnsworth et al.	8,679,137 B2	3/2014	Bauman et al.
8,599,450 B2	12/2013	Kubo et al.	8,679,154 B2	3/2014	Smith et al.
8,602,287 B2	12/2013	Yates et al.	8,679,156 B2	3/2014	Smith et al.
8,602,288 B2	12/2013	Shelton, IV et al.	8,679,454 B2	3/2014	Guire et al.
8,603,077 B2	12/2013	Cooper et al.	8,684,248 B2	4/2014	Milliman
8,603,089 B2	12/2013	Viola	8,684,249 B2	4/2014	Racenet et al.
8,603,110 B2	12/2013	Maruyama et al.	8,684,250 B2	4/2014	Bettuchi et al.
8,603,135 B2	12/2013	Mueller	8,684,253 B2	4/2014	Giordano et al.
8,608,043 B2	12/2013	Scirica	8,684,962 B2	4/2014	Kirschenman et al.
			8,685,004 B2	4/2014	Zemlock et al.
			8,685,020 B2	4/2014	Weizman et al.
			8,690,893 B2	4/2014	Deitch et al.
			8,695,866 B2	4/2014	Leimbach et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

8,696,665 B2	4/2014	Hunt et al.	8,790,658 B2	7/2014	Cigarini et al.
8,701,958 B2	4/2014	Shelton, IV et al.	8,790,684 B2	7/2014	Dave et al.
8,701,959 B2	4/2014	Shah	D711,905 S	8/2014	Morrison et al.
8,708,210 B2	4/2014	Zemlok et al.	8,794,496 B2	8/2014	Scirica
8,708,211 B2	4/2014	Zemlok et al.	8,794,497 B2	8/2014	Zingman
8,708,213 B2	4/2014	Shelton, IV et al.	8,795,276 B2	8/2014	Dietz et al.
8,714,352 B2	5/2014	Farascioni et al.	8,795,308 B2	8/2014	Valin
8,714,429 B2	5/2014	Demmy	8,795,324 B2	8/2014	Kawai et al.
8,714,430 B2	5/2014	Natarajan et al.	8,796,995 B2	8/2014	Cunanan et al.
8,715,256 B2	5/2014	Greener	8,800,681 B2	8/2014	Rousson et al.
8,715,302 B2	5/2014	Ibrahim et al.	8,800,837 B2	8/2014	Zemlok
8,720,766 B2	5/2014	Hess et al.	8,800,838 B2	8/2014	Shelton, IV
8,721,630 B2	5/2014	Ortiz et al.	8,800,839 B2	8/2014	Beetel
8,721,666 B2	5/2014	Schroeder et al.	8,800,840 B2	8/2014	Jankowski
8,727,197 B2	5/2014	Hess et al.	8,800,841 B2	8/2014	Ellerhorst et al.
8,727,199 B2	5/2014	Wenchell	8,801,710 B2	8/2014	Ullrich et al.
8,727,200 B2	5/2014	Roy	8,801,734 B2	8/2014	Shelton, IV et al.
8,727,961 B2	5/2014	Ziv	8,801,735 B2	8/2014	Shelton, IV et al.
8,728,099 B2	5/2014	Cohn et al.	8,801,752 B2	8/2014	Fortier et al.
8,728,119 B2	5/2014	Cummins	8,801,801 B2	8/2014	Datta et al.
8,733,470 B2	5/2014	Matthias et al.	8,806,973 B2	8/2014	Ross et al.
8,733,612 B2	5/2014	Ma	8,807,414 B2	8/2014	Ross et al.
8,733,613 B2	5/2014	Huitema et al.	8,808,161 B2	8/2014	Gregg et al.
8,733,614 B2	5/2014	Ross et al.	8,808,164 B2	8/2014	Hoffman et al.
8,734,336 B2	5/2014	Bonadio et al.	8,808,274 B2	8/2014	Hartwell
8,734,359 B2	5/2014	Ibanez et al.	8,808,294 B2	8/2014	Fox et al.
8,734,478 B2	5/2014	Widenhouse et al.	8,808,308 B2	8/2014	Boukhny et al.
8,734,831 B2	5/2014	Kim et al.	8,808,311 B2	8/2014	Heinrich et al.
8,739,033 B2	5/2014	Rosenberg	8,808,325 B2	8/2014	Hess et al.
8,739,417 B2	6/2014	Tokunaga et al.	8,810,197 B2	8/2014	Juergens
8,740,034 B2	6/2014	Morgan et al.	8,811,017 B2	8/2014	Fujii et al.
8,740,037 B2	6/2014	Shelton, IV et al.	8,813,866 B2	8/2014	Suzuki
8,740,038 B2	6/2014	Shelton, IV et al.	8,814,024 B2	8/2014	Woodard, Jr. et al.
8,740,987 B2	6/2014	Geremakis et al.	8,814,025 B2	8/2014	Miller et al.
8,746,529 B2	6/2014	Shelton, IV et al.	8,814,836 B2	8/2014	Ignon et al.
8,746,530 B2	6/2014	Giordano et al.	8,815,594 B2	8/2014	Harris et al.
8,746,533 B2	6/2014	Whitman et al.	8,818,523 B2	8/2014	Olson et al.
8,746,535 B2	6/2014	Shelton, IV et al.	8,820,603 B2	9/2014	Shelton, IV et al.
8,747,238 B2	6/2014	Shelton, IV et al.	8,820,605 B2	9/2014	Shelton, IV
8,747,441 B2	6/2014	Konieczynski et al.	8,820,606 B2	9/2014	Hodgkinson
8,752,264 B2	6/2014	Ackley et al.	8,820,607 B2	9/2014	Marczyk
8,752,699 B2	6/2014	Morgan et al.	8,820,608 B2	9/2014	Miyamoto
8,752,747 B2	6/2014	Shelton, IV et al.	8,821,514 B2	9/2014	Aranyi
8,752,748 B2	6/2014	Whitman et al.	8,822,934 B2	9/2014	Sayeh et al.
8,752,749 B2	6/2014	Moore et al.	8,825,164 B2	9/2014	Tweden et al.
8,753,664 B2	6/2014	Dao et al.	8,827,133 B2	9/2014	Shelton, IV et al.
8,757,287 B2	6/2014	Mak et al.	8,827,134 B2	9/2014	Viola et al.
8,757,465 B2	6/2014	Woodard, Jr. et al.	8,827,903 B2	9/2014	Shelton, IV et al.
8,758,235 B2	6/2014	Jaworek	8,833,219 B2	9/2014	Pierce
8,758,366 B2	6/2014	McLean et al.	8,833,630 B2	9/2014	Milliman
8,758,391 B2	6/2014	Swayze et al.	8,833,632 B2	9/2014	Swensgard
8,758,438 B2	6/2014	Boyce et al.	8,834,353 B2	9/2014	Dejima et al.
8,763,875 B2	7/2014	Morgan et al.	8,834,498 B2	9/2014	Byrum et al.
8,763,877 B2	7/2014	Schall et al.	8,834,518 B2	9/2014	Faller et al.
8,763,879 B2	7/2014	Shelton, IV et al.	8,840,003 B2	9/2014	Morgan et al.
8,764,732 B2	7/2014	Hartwell	8,840,603 B2	9/2014	Shelton, IV et al.
8,770,458 B2	7/2014	Scirica	8,840,609 B2	9/2014	Stuebe
8,770,459 B2	7/2014	Racenet et al.	8,840,876 B2	9/2014	Eemeta et al.
8,770,460 B2	7/2014	Belzer	8,844,789 B2	9/2014	Shelton, IV et al.
8,771,169 B2	7/2014	Whitman et al.	8,844,790 B2	9/2014	Demmy et al.
8,771,260 B2	7/2014	Conlon et al.	8,851,215 B2	10/2014	Goto
8,777,004 B2	7/2014	Shelton, IV et al.	8,851,354 B2	10/2014	Swensgard et al.
8,777,082 B2	7/2014	Scirica	8,852,174 B2	10/2014	Burbank
8,777,083 B2	7/2014	Racenet et al.	8,852,185 B2	10/2014	Twomey
8,777,898 B2	7/2014	Suon et al.	8,852,199 B2	10/2014	Deslauriers et al.
8,783,541 B2	7/2014	Shelton, IV et al.	8,852,218 B2	10/2014	Hughett, Sr. et al.
8,783,542 B2	7/2014	Riesterberg et al.	8,857,693 B2	10/2014	Schuckmann et al.
8,783,543 B2	7/2014	Shelton, IV et al.	8,857,694 B2	10/2014	Shelton, IV et al.
8,784,304 B2	7/2014	Mikkaichi et al.	8,858,538 B2	10/2014	Belson et al.
8,784,404 B2	7/2014	Doyle et al.	8,858,571 B2	10/2014	Shelton, IV et al.
8,784,415 B2	7/2014	Malackowski et al.	8,858,590 B2	10/2014	Shelton, IV et al.
8,789,737 B2	7/2014	Hodgkinson et al.	8,864,007 B2	10/2014	Widenhouse et al.
8,789,739 B2	7/2014	Swensgard	8,864,009 B2	10/2014	Shelton, IV et al.
8,789,740 B2	7/2014	Baxter, III et al.	8,864,010 B2	10/2014	Williams
8,789,741 B2	7/2014	Baxter, III et al.	8,870,050 B2	10/2014	Hodgkinson
			8,870,867 B2	10/2014	Walberg et al.
			8,870,912 B2	10/2014	Brisson et al.
			8,875,971 B2	11/2014	Hall et al.
			8,875,972 B2	11/2014	Weisenburgh, II et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

8,876,857	B2	11/2014	Burbank	8,978,954	B2	3/2015	Shelton, IV et al.
8,876,858	B2	11/2014	Braun	8,978,955	B2	3/2015	Aronhalt et al.
8,887,979	B2	11/2014	Mastri et al.	8,978,956	B2	3/2015	Schall et al.
8,888,688	B2	11/2014	Julian et al.	8,979,843	B2	3/2015	Timm et al.
8,888,695	B2	11/2014	Piskun et al.	8,979,890	B2	3/2015	Boudreaux
8,888,792	B2	11/2014	Harris et al.	8,982,195	B2	3/2015	Claus et al.
8,888,809	B2	11/2014	Davison et al.	8,985,429	B2	3/2015	Balek et al.
8,893,946	B2	11/2014	Boudreaux et al.	8,986,302	B2	3/2015	Aldridge et al.
8,893,949	B2	11/2014	Shelton, IV et al.	8,989,903	B2	3/2015	Weir et al.
8,894,647	B2	11/2014	Beardsley et al.	8,991,676	B2	3/2015	Hess et al.
8,894,654	B2	11/2014	Anderson	8,991,677	B2	3/2015	Moore et al.
8,899,460	B2	12/2014	Wojcicki	8,991,678	B2	3/2015	Wellman et al.
8,899,461	B2	12/2014	Farascioni	8,992,042	B2	3/2015	Eichenholz
8,899,462	B2	12/2014	Kostrzewski et al.	8,992,422	B2	3/2015	Spivey et al.
8,899,463	B2	12/2014	Schall et al.	8,992,565	B2	3/2015	Brisson et al.
8,899,464	B2	12/2014	Hueil et al.	8,996,165	B2	3/2015	Wang et al.
8,899,465	B2	12/2014	Shelton, IV et al.	8,998,058	B2	4/2015	Moore et al.
8,899,466	B2	12/2014	Baxter, III et al.	8,998,059	B2	4/2015	Smith et al.
8,900,267	B2	12/2014	Woolfson et al.	8,998,060	B2	4/2015	Bruewer et al.
8,905,287	B2	12/2014	Racenet et al.	8,998,061	B2	4/2015	Williams et al.
8,905,977	B2	12/2014	Shelton et al.	8,998,939	B2	4/2015	Price et al.
8,910,846	B2	12/2014	Viola	9,000,720	B2	4/2015	Stulen et al.
8,911,426	B2	12/2014	Coppeta et al.	9,002,518	B2	4/2015	Manzo et al.
8,911,448	B2	12/2014	Stein	9,004,339	B1	4/2015	Park
8,911,460	B2	12/2014	Neurohr et al.	9,005,230	B2	4/2015	Yates et al.
8,911,471	B2	12/2014	Spivey et al.	9,005,238	B2	4/2015	DeSantis et al.
8,920,433	B2	12/2014	Barrier et al.	9,005,243	B2	4/2015	Stopek et al.
8,920,435	B2	12/2014	Smith et al.	9,010,606	B2	4/2015	Aranyi et al.
8,920,438	B2	12/2014	Aranyi et al.	9,010,608	B2	4/2015	Casasanta, Jr. et al.
8,920,443	B2	12/2014	Hiles et al.	9,010,611	B2	4/2015	Ross et al.
8,920,444	B2	12/2014	Hiles et al.	9,011,437	B2	4/2015	Woodruff et al.
8,922,163	B2	12/2014	Macdonald	9,011,439	B2	4/2015	Shalaby et al.
8,925,782	B2	1/2015	Shelton, IV	9,011,471	B2	4/2015	Timm et al.
8,925,783	B2	1/2015	Zemlok et al.	9,016,539	B2	4/2015	Kostrzewski et al.
8,925,788	B2	1/2015	Hess et al.	9,016,540	B2	4/2015	Whitman et al.
8,926,506	B2	1/2015	Widenhouse et al.	9,016,541	B2	4/2015	Viola et al.
8,926,598	B2	1/2015	Mollere et al.	9,016,542	B2	4/2015	Shelton, IV et al.
8,931,576	B2	1/2015	Iwata	9,016,545	B2	4/2015	Aranyi et al.
8,931,679	B2	1/2015	Kostrzewski	9,017,331	B2	4/2015	Fox
8,931,680	B2	1/2015	Milliman	9,017,355	B2	4/2015	Smith et al.
8,931,682	B2	1/2015	Timm et al.	9,017,369	B2	4/2015	Renger et al.
8,936,614	B2	1/2015	Allen, IV	9,017,371	B2	4/2015	Whitman et al.
8,939,343	B2	1/2015	Milliman et al.	9,021,684	B2	5/2015	Lenker et al.
8,939,344	B2	1/2015	Olson et al.	9,023,014	B2	5/2015	Chowanec et al.
8,945,095	B2	2/2015	Blumenkranz et al.	9,023,069	B2	5/2015	Kasvikis et al.
8,945,163	B2	2/2015	Voegelé et al.	9,023,071	B2	5/2015	Miller et al.
8,955,732	B2	2/2015	Zemlok et al.	9,026,347	B2	5/2015	Gadh et al.
8,956,342	B1	2/2015	Russo et al.	9,027,817	B2	5/2015	Milliman et al.
8,956,390	B2	2/2015	Shah et al.	9,028,494	B2	5/2015	Shelton, IV et al.
8,958,860	B2	2/2015	Banerjee et al.	9,028,495	B2	5/2015	Mueller et al.
8,960,519	B2	2/2015	Whitman et al.	9,028,510	B2	5/2015	Miyamoto et al.
8,960,520	B2	2/2015	McCuen	9,028,519	B2	5/2015	Yates et al.
8,960,521	B2	2/2015	Kostrzewski	9,030,169	B2	5/2015	Christensen et al.
8,961,191	B2	2/2015	Hanshew	9,033,203	B2	5/2015	Woodard, Jr. et al.
8,961,504	B2	2/2015	Hoarau et al.	9,033,204	B2	5/2015	Shelton, IV et al.
8,963,714	B2	2/2015	Medhal et al.	9,034,505	B2	5/2015	Detry et al.
D725,674	S	3/2015	Jung et al.	9,038,881	B1	5/2015	Schaller et al.
8,967,443	B2	3/2015	McCuen	9,039,690	B2	5/2015	Kersten et al.
8,967,444	B2	3/2015	Beetel	9,039,694	B2	5/2015	Ross et al.
8,967,446	B2	3/2015	Beardsley et al.	9,039,720	B2	5/2015	Madan
8,967,448	B2	3/2015	Carter et al.	9,043,027	B2	5/2015	Durant et al.
8,968,276	B2	3/2015	Zemlok et al.	9,044,227	B2	6/2015	Shelton, IV et al.
8,968,308	B2	3/2015	Horner et al.	9,044,228	B2	6/2015	Woodard, Jr. et al.
8,968,312	B2	3/2015	Marczyk et al.	9,044,229	B2	6/2015	Scheib et al.
8,968,337	B2	3/2015	Whitfield et al.	9,044,230	B2	6/2015	Morgan et al.
8,968,340	B2	3/2015	Chowanec et al.	9,044,241	B2	6/2015	Barner et al.
8,968,355	B2	3/2015	Malkowski et al.	9,044,261	B2	6/2015	Houser
8,968,358	B2	3/2015	Reschke	9,044,281	B2	6/2015	Pool et al.
8,970,507	B2	3/2015	Holbein et al.	9,050,083	B2	6/2015	Yates et al.
8,973,803	B2	3/2015	Hall et al.	9,050,084	B2	6/2015	Schmid et al.
8,973,804	B2	3/2015	Hess et al.	9,050,100	B2	6/2015	Yates et al.
8,973,805	B2	3/2015	Scirica et al.	9,050,120	B2	6/2015	Swarup et al.
8,974,440	B2	3/2015	Farritor et al.	9,050,123	B2	6/2015	Krause et al.
8,974,542	B2	3/2015	Fujimoto et al.	9,050,176	B2	6/2015	Datta et al.
8,974,932	B2	3/2015	McGahan et al.	9,050,192	B2	6/2015	Mansmann
				9,055,941	B2	6/2015	Schmid et al.
				9,055,942	B2	6/2015	Balbierz et al.
				9,055,943	B2	6/2015	Zemlok et al.
				9,055,944	B2	6/2015	Hodgkinson et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

9,055,961 B2	6/2015	Manzo et al.	9,168,054 B2	10/2015	Turner et al.
9,060,770 B2	6/2015	Shelton, IV et al.	9,168,144 B2	10/2015	Rivin et al.
9,060,776 B2	6/2015	Yates et al.	9,179,911 B2	11/2015	Morgan et al.
9,060,794 B2	6/2015	Kang et al.	9,179,912 B2	11/2015	Yates et al.
9,060,894 B2	6/2015	Wubbeling	9,180,223 B2	11/2015	Yu et al.
9,061,392 B2	6/2015	Forgues et al.	9,182,244 B2	11/2015	Luke et al.
9,072,515 B2	7/2015	Hall et al.	9,186,046 B2	11/2015	Ramamurthy et al.
9,072,523 B2	7/2015	Houser et al.	9,186,137 B2	11/2015	Farascioni et al.
9,072,535 B2	7/2015	Shelton, IV et al.	9,186,140 B2	11/2015	Hiles et al.
9,072,536 B2	7/2015	Shelton, IV et al.	9,186,142 B2	11/2015	Fanelli et al.
9,078,653 B2	7/2015	Leimbach et al.	9,186,143 B2	11/2015	Timm et al.
9,078,654 B2	7/2015	Whitman et al.	9,186,148 B2	11/2015	Felder et al.
9,084,601 B2	7/2015	Moore et al.	9,186,221 B2	11/2015	Burbank
9,084,602 B2	7/2015	Gleiman	9,192,380 B2	11/2015	(Tarinelli) Racenet et al.
9,086,875 B2	7/2015	Harrat et al.	9,192,384 B2	11/2015	Bettuchi
9,089,326 B2	7/2015	Krumanaker et al.	9,192,430 B2	11/2015	Rachlin et al.
9,089,330 B2	7/2015	Widenhouse et al.	9,192,434 B2	11/2015	Twomey et al.
9,089,352 B2	7/2015	Jeong	9,193,045 B2	11/2015	Saur et al.
9,089,360 B2	7/2015	Messerly et al.	9,197,079 B2	11/2015	Yip et al.
9,091,588 B2	7/2015	Lefler	D744,528 S	12/2015	Agrawal
D736,792 S	8/2015	Brinda et al.	9,198,642 B2	12/2015	Storz
9,095,339 B2	8/2015	Moore et al.	9,198,644 B2	12/2015	Balek et al.
9,095,346 B2	8/2015	Houser et al.	9,198,661 B2	12/2015	Swensgard
9,095,362 B2	8/2015	Dachs, II et al.	9,198,662 B2	12/2015	Barton et al.
9,095,367 B2	8/2015	Olson et al.	9,198,683 B2	12/2015	Friedman et al.
9,096,033 B2	8/2015	Holop et al.	9,204,830 B2	12/2015	Zand et al.
9,099,863 B2	8/2015	Smith et al.	9,204,877 B2	12/2015	Whitman et al.
9,099,877 B2	8/2015	Banos et al.	9,204,878 B2	12/2015	Hall et al.
9,101,358 B2	8/2015	Kerr et al.	9,204,879 B2	12/2015	Shelton, IV
9,101,385 B2	8/2015	Shelton, IV et al.	9,204,880 B2	12/2015	Baxter, III et al.
9,101,475 B2	8/2015	Wei et al.	9,204,923 B2	12/2015	Manzo et al.
9,107,663 B2	8/2015	Swensgard	9,204,924 B2	12/2015	Marczyk et al.
9,107,690 B2	8/2015	Bales, Jr. et al.	9,211,120 B2	12/2015	Scheib et al.
9,110,587 B2	8/2015	Kim et al.	9,211,121 B2	12/2015	Hall et al.
9,113,862 B2	8/2015	Morgan et al.	9,211,122 B2	12/2015	Hagerty et al.
9,113,864 B2	8/2015	Morgan et al.	9,216,013 B2	12/2015	Scirica et al.
9,113,865 B2	8/2015	Shelton, IV et al.	9,216,019 B2	12/2015	Schmid et al.
9,113,868 B2	8/2015	Felder et al.	9,216,020 B2	12/2015	Zhang et al.
9,113,873 B2	8/2015	Marczyk et al.	9,216,030 B2	12/2015	Fan et al.
9,113,874 B2	8/2015	Shelton, IV et al.	9,216,062 B2	12/2015	Duque et al.
9,113,876 B2	8/2015	Zemlok et al.	9,220,500 B2	12/2015	Swayze et al.
9,113,879 B2	8/2015	Felder et al.	9,220,501 B2	12/2015	Baxter, III et al.
9,113,880 B2	8/2015	Zemlok et al.	9,220,502 B2	12/2015	Zemlok et al.
9,113,881 B2	8/2015	Scirica	9,220,508 B2	12/2015	Dannaher
9,113,883 B2	8/2015	Aronhalt et al.	9,220,559 B2	12/2015	Worrell et al.
9,113,884 B2	8/2015	Shelton, IV et al.	9,220,570 B2	12/2015	Kim et al.
9,113,887 B2	8/2015	Behnke, II et al.	D746,854 S	1/2016	Shardlow et al.
9,119,615 B2	9/2015	Felder et al.	9,226,750 B2	1/2016	Weir et al.
9,119,657 B2	9/2015	Shelton, IV et al.	9,226,751 B2	1/2016	Shelton, IV et al.
9,119,898 B2	9/2015	Bayon et al.	9,226,754 B2	1/2016	D'Agostino et al.
9,119,957 B2	9/2015	Gantz et al.	9,226,761 B2	1/2016	Burbank
9,123,286 B2	9/2015	Park	9,226,767 B2	1/2016	Stulen et al.
9,124,097 B2	9/2015	Cruz	9,232,941 B2	1/2016	Mandakolathur Vasudevan et al.
9,125,654 B2	9/2015	Aronhalt et al.	9,232,945 B2	1/2016	Zingman
9,125,662 B2	9/2015	Shelton, IV	9,232,979 B2	1/2016	Parihar et al.
9,126,317 B2	9/2015	Lawton et al.	9,233,610 B2	1/2016	Kim et al.
9,131,835 B2	9/2015	Widenhouse et al.	9,237,891 B2	1/2016	Shelton, IV
9,131,940 B2	9/2015	Huitema et al.	9,237,892 B2	1/2016	Hodgkinson
9,131,950 B2	9/2015	Matthew	9,237,895 B2	1/2016	McCarthy et al.
9,131,957 B2	9/2015	Skarbnik et al.	9,237,900 B2	1/2016	Boudreaux et al.
9,138,225 B2	9/2015	Huang et al.	9,237,921 B2	1/2016	Messerly et al.
9,138,226 B2	9/2015	Racenet et al.	9,239,064 B2	1/2016	Helbig et al.
9,144,455 B2	9/2015	Kennedy et al.	9,240,740 B2	1/2016	Zeng et al.
D741,882 S	10/2015	Shmilov et al.	9,241,711 B2	1/2016	Ivanko
9,149,274 B2	10/2015	Spivey et al.	9,241,712 B2	1/2016	Zemlok et al.
9,149,324 B2	10/2015	Huang et al.	9,241,714 B2	1/2016	Timm et al.
9,149,325 B2	10/2015	Worrell et al.	9,241,716 B2	1/2016	Whitman
9,153,994 B2	10/2015	Wood et al.	9,241,731 B2	1/2016	Boudreaux et al.
9,161,753 B2	10/2015	Prior	9,244,524 B2	1/2016	Inoue et al.
9,161,769 B2	10/2015	Stoddard et al.	D748,668 S	2/2016	Kim et al.
9,161,803 B2	10/2015	Yates et al.	D749,623 S	2/2016	Gray et al.
9,161,807 B2	10/2015	Garrison	D750,122 S	2/2016	Shardlow et al.
9,168,038 B2	10/2015	Shelton, IV et al.	D750,129 S	2/2016	Kwon
9,168,039 B1	10/2015	Knodel	9,254,131 B2	2/2016	Soltz et al.
9,168,042 B2	10/2015	Milliman	9,259,274 B2	2/2016	Prisco
			9,259,275 B2	2/2016	Burbank
			9,261,172 B2	2/2016	Solomon et al.
			9,265,500 B2	2/2016	Sorrentino et al.
			9,265,516 B2	2/2016	Casey et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

9,265,585 B2	2/2016	Wingardner et al.	9,333,082 B2	5/2016	Wei et al.
9,271,718 B2	3/2016	Milad et al.	9,337,668 B2	5/2016	Yip
9,271,727 B2	3/2016	McGuckin, Jr. et al.	9,339,226 B2	5/2016	van der Walt et al.
9,271,753 B2	3/2016	Butler et al.	9,345,477 B2	5/2016	Anim et al.
9,271,799 B2	3/2016	Shelton, IV et al.	9,345,479 B2	5/2016	(Tarinelli) Racenet et al.
9,272,406 B2	3/2016	Aronhalt et al.	9,345,480 B2	5/2016	Hessler et al.
9,274,095 B2	3/2016	Humayun et al.	9,345,481 B2	5/2016	Hall et al.
9,277,919 B2	3/2016	Timmer et al.	9,345,503 B2	5/2016	Ishida et al.
9,277,922 B2	3/2016	Carter et al.	9,351,726 B2	5/2016	Leimbach et al.
9,282,962 B2	3/2016	Schmid et al.	9,351,727 B2	5/2016	Leimbach et al.
9,282,963 B2	3/2016	Bryant	9,351,728 B2	5/2016	Sniffin et al.
9,282,966 B2	3/2016	Shelton, IV et al.	9,351,730 B2	5/2016	Schmid et al.
9,282,974 B2	3/2016	Shelton, IV	9,351,731 B2	5/2016	Carter et al.
9,283,028 B2	3/2016	Johnson	9,351,732 B2	5/2016	Hodgkinson
9,283,045 B2	3/2016	Rhee et al.	D758,433 S	6/2016	Lee et al.
9,283,054 B2	3/2016	Morgan et al.	D759,063 S	6/2016	Chen
9,289,206 B2	3/2016	Hess et al.	9,358,003 B2	6/2016	Hall et al.
9,289,207 B2	3/2016	Shelton, IV	9,358,005 B2	6/2016	Shelton, IV et al.
9,289,210 B2	3/2016	Baxter, III et al.	9,358,015 B2	6/2016	Sorrentino et al.
9,289,211 B2	3/2016	Williams et al.	9,358,031 B2	6/2016	Manzo
9,289,212 B2	3/2016	Shelton, IV et al.	9,364,217 B2	6/2016	Kostrzewski et al.
9,289,225 B2	3/2016	Shelton, IV et al.	9,364,219 B2	6/2016	Olson et al.
9,289,256 B2	3/2016	Shelton, IV et al.	9,364,220 B2	6/2016	Williams
9,293,757 B2	3/2016	Toussaint et al.	9,364,226 B2	6/2016	Zemlok et al.
9,295,464 B2	3/2016	Shelton, IV et al.	9,364,229 B2	6/2016	D'Agostino et al.
9,295,465 B2	3/2016	Farascioni	9,364,230 B2	6/2016	Shelton, IV et al.
9,295,466 B2	3/2016	Hodgkinson et al.	9,364,231 B2	6/2016	Wenchell
9,295,467 B2	3/2016	Scirica	9,364,233 B2	6/2016	Alexander, III et al.
9,295,468 B2	3/2016	Heinrich et al.	9,364,279 B2	6/2016	Houser et al.
9,295,514 B2	3/2016	Shelton, IV et al.	9,368,991 B2	6/2016	Qahouq
9,295,522 B2	3/2016	Kostrzewski	9,370,341 B2	6/2016	Ceniccola et al.
9,295,565 B2	3/2016	McLean	9,370,358 B2	6/2016	Shelton, IV et al.
9,295,784 B2	3/2016	Eggert et al.	9,370,364 B2	6/2016	Smith et al.
9,301,691 B2	4/2016	Hufnagel et al.	9,375,206 B2	6/2016	Vidal et al.
9,301,752 B2	4/2016	Mandakolathur Vasudevan et al.	9,375,218 B2	6/2016	Wheeler et al.
9,301,753 B2	4/2016	Aldridge et al.	9,375,230 B2	6/2016	Ross et al.
9,301,755 B2	4/2016	Shelton, IV et al.	9,375,232 B2	6/2016	Hunt et al.
9,301,759 B2	4/2016	Spivey et al.	9,375,255 B2	6/2016	Houser et al.
9,307,965 B2	4/2016	Ming et al.	D761,309 S	7/2016	Lee et al.
9,307,986 B2	4/2016	Hall et al.	9,381,058 B2	7/2016	Houser et al.
9,307,987 B2	4/2016	Swensgard et al.	9,383,881 B2	7/2016	Day et al.
9,307,988 B2	4/2016	Shelton, IV	9,386,983 B2	7/2016	Swensgard et al.
9,307,989 B2	4/2016	Shelton, IV et al.	9,386,984 B2	7/2016	Aronhalt et al.
9,307,994 B2	4/2016	Gresham et al.	9,386,985 B2	7/2016	Koch, Jr. et al.
9,308,009 B2	4/2016	Madan et al.	9,386,988 B2	7/2016	Baxter, III et al.
9,308,011 B2	4/2016	Chao et al.	9,387,003 B2	7/2016	Kaercher et al.
9,308,646 B2	4/2016	Lim et al.	9,393,015 B2	7/2016	Laurent et al.
9,313,915 B2	4/2016	Niu et al.	9,393,017 B2	7/2016	Flanagan et al.
9,314,246 B2	4/2016	Shelton, IV et al.	9,393,018 B2	7/2016	Wang et al.
9,314,247 B2	4/2016	Shelton, IV et al.	9,398,911 B2	7/2016	Auld
9,314,261 B2	4/2016	Bales, Jr. et al.	D763,277 S	8/2016	Ahmed et al.
9,314,339 B2	4/2016	Mansmann	D764,498 S	8/2016	Capela et al.
9,314,908 B2	4/2016	Tanimoto et al.	9,402,604 B2	8/2016	Williams et al.
9,320,518 B2	4/2016	Henderson et al.	9,402,625 B2	8/2016	Coleman et al.
9,320,520 B2	4/2016	Shelton, IV et al.	9,402,626 B2	8/2016	Ortiz et al.
9,320,521 B2	4/2016	Shelton, IV et al.	9,402,627 B2	8/2016	Stevenson et al.
9,320,523 B2	4/2016	Shelton, IV et al.	9,402,629 B2	8/2016	Ehrenfels et al.
D755,196 S	5/2016	Meyers et al.	9,402,679 B2	8/2016	Ginnebaugh et al.
D756,373 S	5/2016	Raskin et al.	9,408,604 B2	8/2016	Shelton, IV et al.
D756,377 S *	5/2016	Connolly D14/485	9,408,606 B2	8/2016	Shelton, IV
D757,028 S	5/2016	Goldenberg et al.	9,408,622 B2	8/2016	Stulen et al.
9,326,767 B2	5/2016	Koch et al.	9,411,370 B2	8/2016	Benni et al.
9,326,768 B2	5/2016	Shelton, IV	9,413,128 B2	8/2016	Tien et al.
9,326,769 B2	5/2016	Shelton, IV et al.	9,414,838 B2	8/2016	Shelton, IV et al.
9,326,770 B2	5/2016	Shelton, IV et al.	9,414,849 B2	8/2016	Nagashimada
9,326,771 B2	5/2016	Baxter, III et al.	9,414,880 B2	8/2016	Monson et al.
9,326,788 B2	5/2016	Batross et al.	9,420,967 B2	8/2016	Zand et al.
9,326,812 B2	5/2016	Waler et al.	9,421,003 B2	8/2016	Williams et al.
9,327,061 B2	5/2016	Govil et al.	9,421,014 B2	8/2016	Ingmanson et al.
9,331,721 B2	5/2016	Martinez Nuevo et al.	9,421,030 B2	8/2016	Cole et al.
9,332,890 B2	5/2016	Ozawa	9,421,060 B2	8/2016	Monson et al.
9,332,974 B2	5/2016	Henderson et al.	9,421,062 B2	8/2016	Houser et al.
9,332,984 B2	5/2016	Weaner et al.	9,427,223 B2	8/2016	Park et al.
9,332,987 B2	5/2016	Leimbach et al.	9,427,231 B2	8/2016	Racenet et al.
9,333,040 B2	5/2016	Shellenberger et al.	D767,624 S	9/2016	Lee et al.
			9,433,411 B2	9/2016	Racenet et al.
			9,433,419 B2	9/2016	Gonzalez et al.
			9,433,420 B2	9/2016	Hodgkinson
			9,439,649 B2	9/2016	Shelton, IV et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

9,439,650 B2	9/2016	McGuckin, Jr. et al.	9,554,796 B2	1/2017	Kostrzewski
9,439,651 B2	9/2016	Smith et al.	9,554,812 B2	1/2017	Inkpen et al.
9,439,668 B2	9/2016	Timm et al.	9,559,624 B2	1/2017	Philipp
9,445,808 B2	9/2016	Woodard, Jr. et al.	9,561,013 B2	2/2017	Tsuchiya
9,445,813 B2	9/2016	Shelton, IV et al.	9,561,030 B2	2/2017	Zhang et al.
9,445,816 B2	9/2016	Swayze et al.	9,561,031 B2	2/2017	Heinrich et al.
9,445,817 B2	9/2016	Bettuchi	9,561,032 B2	2/2017	Shelton, IV et al.
9,446,226 B2	9/2016	Zilberman	9,561,038 B2	2/2017	Shelton, IV et al.
9,451,938 B2	9/2016	Overes et al.	9,561,045 B2	2/2017	Hinman et al.
9,451,958 B2	9/2016	Shelton, IV et al.	9,566,061 B2	2/2017	Aronhalt et al.
D768,152 S	10/2016	Gutierrez et al.	9,566,062 B2	2/2017	Boudreaux
D768,156 S	10/2016	Frincke	9,566,065 B2	2/2017	Knodel
D769,315 S	10/2016	Scotti	9,566,067 B2	2/2017	Milliman et al.
D769,930 S	10/2016	Agrawal	9,572,574 B2	2/2017	Shelton, IV et al.
9,461,340 B2	10/2016	Li et al.	9,572,577 B2	2/2017	Lloyd et al.
9,463,040 B2	10/2016	Jeong et al.	9,572,592 B2	2/2017	Price et al.
9,463,260 B2	10/2016	Stopek	9,574,644 B2	2/2017	Parihar
9,468,438 B2	10/2016	Baber et al.	9,579,088 B2	2/2017	Farritor et al.
9,468,447 B2	10/2016	Aman et al.	D780,803 S *	3/2017	Gill D14/489
9,470,297 B2	10/2016	Aranyi et al.	D781,879 S	3/2017	Butcher et al.
9,471,969 B2	10/2016	Zeng et al.	D782,530 S	3/2017	Paek et al.
9,474,506 B2	10/2016	Magnin et al.	9,585,550 B2	3/2017	Abel et al.
9,474,523 B2	10/2016	Meade et al.	9,585,657 B2	3/2017	Shelton, IV et al.
9,474,540 B2	10/2016	Stokes et al.	9,585,658 B2	3/2017	Shelton, IV
9,475,180 B2	10/2016	Eshleman et al.	9,585,659 B2	3/2017	Viola et al.
D770,476 S	11/2016	Jitkoff et al.	9,585,660 B2	3/2017	Laurent et al.
D770,515 S	11/2016	Cho et al.	9,585,662 B2	3/2017	Shelton, IV et al.
D771,116 S	11/2016	Dellinger et al.	9,585,663 B2	3/2017	Shelton, IV et al.
D772,905 S	11/2016	Ingenlath	9,585,672 B2	3/2017	Bastia
9,480,476 B2	11/2016	Aldridge et al.	9,590,433 B2	3/2017	Li
9,480,492 B2	11/2016	Aranyi et al.	9,592,050 B2	3/2017	Schmid et al.
9,483,095 B2	11/2016	Tran et al.	9,592,052 B2	3/2017	Shelton, IV
9,486,186 B2	11/2016	Fiebig et al.	9,592,053 B2	3/2017	Shelton, IV et al.
9,486,213 B2	11/2016	Altman et al.	9,592,054 B2	3/2017	Schmid et al.
9,486,214 B2	11/2016	Shelton, IV	9,597,073 B2	3/2017	Sorrentino et al.
9,486,302 B2	11/2016	Boey et al.	9,597,075 B2	3/2017	Shelton, IV et al.
9,488,197 B2	11/2016	Wi	9,597,080 B2	3/2017	Milliman et al.
9,492,146 B2	11/2016	Kostrzewski et al.	9,597,104 B2	3/2017	Nicholas et al.
9,492,167 B2	11/2016	Shelton, IV et al.	9,597,143 B2	3/2017	Madan et al.
9,492,170 B2	11/2016	Bear et al.	9,603,595 B2	3/2017	Shelton, IV et al.
9,492,189 B2	11/2016	Williams et al.	9,603,598 B2	3/2017	Shelton, IV et al.
9,492,192 B2	11/2016	To et al.	9,603,599 B2	3/2017	Miller et al.
9,498,213 B2	11/2016	Marczyk et al.	9,603,991 B2	3/2017	Shelton, IV et al.
9,498,219 B2	11/2016	Moore et al.	D783,658 S *	4/2017	Hurst D14/486
9,498,231 B2	11/2016	Haider et al.	9,610,080 B2	4/2017	Whitfield et al.
9,504,455 B2	11/2016	Wang et al.	9,614,258 B2	4/2017	Takahashi et al.
9,504,483 B2	11/2016	Houser et al.	9,615,826 B2	4/2017	Shelton, IV et al.
9,504,521 B2	11/2016	Deutmeyer et al.	9,622,745 B2	4/2017	Ingmanson et al.
D774,547 S	12/2016	Capela et al.	9,629,623 B2	4/2017	Lytte, IV et al.
D775,336 S	12/2016	Shelton, IV et al.	9,629,626 B2	4/2017	Soltz et al.
9,510,827 B2	12/2016	Kostrzewski	9,629,627 B2	4/2017	Kostrzewski et al.
9,510,828 B2	12/2016	Yates et al.	9,629,628 B2	4/2017	Aranyi
9,510,830 B2	12/2016	Shelton, IV et al.	9,629,629 B2	4/2017	Leimbach et al.
9,510,846 B2	12/2016	Sholev et al.	9,629,652 B2	4/2017	Mumaw et al.
9,510,895 B2	12/2016	Houser et al.	9,629,814 B2	4/2017	Widenhouse et al.
9,510,925 B2	12/2016	Hotter et al.	D786,280 S	5/2017	Ma
9,517,063 B2	12/2016	Swayze et al.	D786,896 S	5/2017	Kim et al.
9,517,068 B2	12/2016	Shelton, IV et al.	D787,547 S	5/2017	Basargin et al.
9,517,326 B2	12/2016	Hinman et al.	D788,123 S	5/2017	Shan et al.
9,521,996 B2	12/2016	Armstrong	D788,140 S	5/2017	Hemsley et al.
9,522,003 B2	12/2016	Weir et al.	9,636,111 B2	5/2017	Wenchell
9,522,029 B2	12/2016	Yates et al.	9,636,113 B2	5/2017	Wenchell
9,526,481 B2	12/2016	Storz et al.	9,636,850 B2	5/2017	Stopek (nee Prommersberger) et al.
9,526,499 B2	12/2016	Kostrzewski et al.	9,641,122 B2	5/2017	Romanowich et al.
9,526,563 B2	12/2016	Twomey	9,642,620 B2	5/2017	Baxter, III et al.
9,526,564 B2	12/2016	Rusin	9,649,096 B2	5/2017	Sholev
D776,683 S	1/2017	Gobinski et al.	9,649,110 B2	5/2017	Parihar et al.
D777,773 S	1/2017	Shi	9,649,111 B2	5/2017	Shelton, IV et al.
9,532,783 B2	1/2017	Swayze et al.	9,655,613 B2	5/2017	Schaller
9,539,726 B2	1/2017	Simaan et al.	9,655,614 B2	5/2017	Swensgard et al.
9,545,253 B2	1/2017	Worrell et al.	9,655,615 B2	5/2017	Knodel et al.
9,545,258 B2	1/2017	Smith et al.	9,655,616 B2	5/2017	Aranyi
9,549,732 B2	1/2017	Yates et al.	9,655,624 B2	5/2017	Shelton, IV et al.
9,549,735 B2	1/2017	Shelton, IV et al.	9,662,108 B2	5/2017	Williams
9,554,794 B2	1/2017	Baber et al.	9,662,110 B2	5/2017	Huang et al.
			9,662,116 B2	5/2017	Smith et al.
			9,662,131 B2	5/2017	Omori et al.
			D788,792 S	6/2017	Alessandri et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

D789,384 S *	6/2017	Lin	D14/485	D798,319 S	9/2017	Bergstrand et al.
D790,570 S	6/2017	Butcher et al.		9,750,498 B2	9/2017	Timm et al.
9,668,728 B2	6/2017	Williams et al.		9,750,499 B2	9/2017	Leimbach et al.
9,668,729 B2	6/2017	Williams et al.		9,750,501 B2	9/2017	Shelton, IV et al.
9,668,732 B2	6/2017	Patel et al.		9,750,502 B2	9/2017	Scirica et al.
9,668,733 B2	6/2017	Williams		9,750,639 B2	9/2017	Barnes et al.
9,668,734 B2	6/2017	Kostrzewski et al.		9,757,123 B2	9/2017	Giordano et al.
9,675,344 B2	6/2017	Combrowski et al.		9,757,124 B2	9/2017	Schellin et al.
9,675,351 B2	6/2017	Hodgkinson et al.		9,757,126 B2	9/2017	Cappola
9,675,354 B2	6/2017	Weir et al.		9,757,128 B2	9/2017	Baber et al.
9,675,355 B2	6/2017	Shelton, IV et al.		9,757,129 B2	9/2017	Williams
9,675,372 B2	6/2017	Laurent et al.		9,757,130 B2	9/2017	Shelton, IV
9,675,375 B2	6/2017	Houser et al.		9,763,662 B2	9/2017	Shelton, IV et al.
9,675,405 B2	6/2017	Trees et al.		9,763,668 B2	9/2017	Whitfield et al.
9,675,819 B2	6/2017	Dunbar et al.		9,770,245 B2	9/2017	Swayze et al.
9,681,870 B2	6/2017	Baxter, III et al.		9,770,274 B2	9/2017	Pool et al.
9,681,873 B2	6/2017	Smith et al.		D798,886 S	10/2017	Prophete et al.
9,681,884 B2	6/2017	Clem et al.		D800,742 S	10/2017	Rhodes
9,687,230 B2	6/2017	Leimbach et al.		D800,744 S	10/2017	Jitkoff et al.
9,687,231 B2	6/2017	Baxter, III et al.		D800,766 S	10/2017	Park et al.
9,687,232 B2	6/2017	Shelton, IV et al.		D800,904 S	10/2017	Leimbach et al.
9,687,233 B2	6/2017	Fernandez et al.		9,775,608 B2	10/2017	Aronhalt et al.
9,687,236 B2	6/2017	Leimbach et al.		9,775,609 B2	10/2017	Shelton, IV et al.
9,687,237 B2	6/2017	Schmid et al.		9,775,610 B2	10/2017	Nicholas et al.
9,687,253 B2	6/2017	Detry et al.		9,775,611 B2	10/2017	Kostrzewski
9,689,466 B2	6/2017	Kanai et al.		9,775,613 B2	10/2017	Shelton, IV et al.
9,690,362 B2	6/2017	Leimbach et al.		9,775,614 B2	10/2017	Shelton, IV et al.
9,693,772 B2	7/2017	Ingmanson et al.		9,775,618 B2	10/2017	Bettuchi et al.
9,693,774 B2	7/2017	Gettinger et al.		9,775,635 B2	10/2017	Takei
9,693,777 B2	7/2017	Schellin et al.		9,782,169 B2	10/2017	Kimsey et al.
9,700,309 B2	7/2017	Jaworek et al.		9,782,170 B2	10/2017	Zemlok et al.
9,700,310 B2	7/2017	Morgan et al.		9,782,180 B2	10/2017	Smith et al.
9,700,312 B2	7/2017	Kostrzewski et al.		9,782,193 B2	10/2017	Thistle
9,700,314 B2	7/2017	Marczyk		9,782,214 B2	10/2017	Houser et al.
9,700,317 B2	7/2017	Aronhalt et al.		9,788,834 B2	10/2017	Schmid et al.
9,700,318 B2	7/2017	Scirica et al.		9,788,835 B2	10/2017	Morgan et al.
9,700,319 B2	7/2017	Motooka et al.		9,788,836 B2	10/2017	Overmyer et al.
9,700,320 B2	7/2017	Dinardo et al.		9,788,847 B2	10/2017	Jinno
9,700,321 B2	7/2017	Shelton, IV et al.		9,788,851 B2	10/2017	Dannaher et al.
9,706,981 B2	7/2017	Nicholas et al.		9,788,902 B2	10/2017	Inoue et al.
9,706,991 B2	7/2017	Hess et al.		9,795,379 B2	10/2017	Leimbach et al.
9,706,993 B2	7/2017	Hessler et al.		9,795,380 B2	10/2017	Shelton, IV et al.
9,707,005 B2	7/2017	Strobl et al.		9,795,381 B2	10/2017	Shelton, IV
9,707,026 B2	7/2017	Malackowski et al.		9,795,382 B2	10/2017	Shelton, IV
9,707,033 B2	7/2017	Parihar et al.		9,795,383 B2	10/2017	Aldridge et al.
9,707,043 B2	7/2017	Bozung		9,795,384 B2	10/2017	Weaner et al.
9,707,684 B2	7/2017	Ruiz Morales et al.		9,797,486 B2	10/2017	Zergiebel et al.
9,713,468 B2	7/2017	Harris et al.		9,801,626 B2	10/2017	Parihar et al.
9,713,470 B2	7/2017	Scirica et al.		9,801,627 B2	10/2017	Harris et al.
9,713,474 B2	7/2017	Lorenz		9,801,628 B2	10/2017	Harris et al.
9,717,497 B2	8/2017	Zerkle et al.		9,801,634 B2	10/2017	Shelton, IV et al.
9,717,498 B2	8/2017	Aranyi et al.		9,802,033 B2	10/2017	Hibner et al.
9,718,190 B2	8/2017	Larkin et al.		9,804,618 B2	10/2017	Leimbach et al.
9,722,236 B2	8/2017	Sathrum		D803,234 S	11/2017	Day et al.
9,724,091 B2	8/2017	Shelton, IV et al.		D803,235 S	11/2017	Markson et al.
9,724,092 B2	8/2017	Baxter, III et al.		D803,850 S	11/2017	Chang et al.
9,724,094 B2	8/2017	Baber et al.		9,808,244 B2	11/2017	Leimbach et al.
9,724,096 B2	8/2017	Thompson et al.		9,808,246 B2	11/2017	Shelton, IV et al.
9,724,098 B2	8/2017	Baxter, III et al.		9,808,247 B2	11/2017	Shelton, IV et al.
9,724,118 B2	8/2017	Schulte et al.		9,808,248 B2	11/2017	Hoffman
9,724,163 B2	8/2017	Orban		9,808,249 B2	11/2017	Shelton, IV
9,730,692 B2	8/2017	Shelton, IV et al.		9,814,460 B2	11/2017	Kimsey et al.
9,730,695 B2	8/2017	Leimbach et al.		9,814,462 B2	11/2017	Woodard, Jr. et al.
9,730,697 B2	8/2017	Morgan et al.		9,814,463 B2	11/2017	Williams et al.
9,730,717 B2	8/2017	Katsuki et al.		9,814,530 B2	11/2017	Weir et al.
9,731,410 B2	8/2017	Hirabayashi et al.		9,814,561 B2	11/2017	Forsell
9,733,663 B2	8/2017	Leimbach et al.		9,820,445 B2	11/2017	Simpson et al.
9,737,297 B2	8/2017	Racenet et al.		9,820,737 B2	11/2017	Beardsley et al.
9,737,301 B2	8/2017	Baber et al.		9,820,738 B2	11/2017	Lytle, IV et al.
9,737,302 B2	8/2017	Shelton, IV et al.		9,820,741 B2	11/2017	Kostrzewski
9,737,303 B2	8/2017	Shelton, IV et al.		9,820,768 B2	11/2017	Gee et al.
9,737,365 B2	8/2017	Hegeman et al.		9,825,455 B2	11/2017	Sandhu et al.
9,743,927 B2	8/2017	Whitman		9,826,976 B2	11/2017	Parihar et al.
9,743,928 B2	8/2017	Shelton, IV et al.		9,826,977 B2	11/2017	Leimbach et al.
9,743,929 B2	8/2017	Leimbach et al.		9,826,978 B2	11/2017	Shelton, IV et al.
				9,829,698 B2	11/2017	Haraguchi et al.
				D806,108 S	12/2017	Day
				9,833,236 B2	12/2017	Shelton, IV et al.
				9,833,238 B2	12/2017	Baxter, III et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

9,833,239 B2	12/2017	Yates et al.	9,913,733 B2	3/2018	Piron et al.
9,833,241 B2	12/2017	Huitema et al.	9,918,704 B2	3/2018	Shelton, IV et al.
9,833,242 B2	12/2017	Baxter, III et al.	9,918,714 B2	3/2018	Gibbons, Jr.
9,839,420 B2	12/2017	Shelton, IV et al.	9,918,715 B2	3/2018	Menn
9,839,421 B2	12/2017	Zerkle et al.	9,918,716 B2	3/2018	Baxter, III et al.
9,839,422 B2	12/2017	Schellin et al.	9,918,717 B2	3/2018	Czernik
9,839,423 B2	12/2017	Vendely et al.	9,918,730 B2	3/2018	Trees et al.
9,839,427 B2	12/2017	Swayze et al.	9,924,941 B2	3/2018	Burbank
9,839,428 B2	12/2017	Baxter, III et al.	9,924,942 B2	3/2018	Swayze et al.
9,839,429 B2	12/2017	Weisenburgh, II et al.	9,924,944 B2	3/2018	Shelton, IV et al.
9,839,480 B2	12/2017	Pribanic et al.	9,924,945 B2	3/2018	Zheng et al.
9,844,368 B2	12/2017	Boudreaux et al.	9,924,946 B2	3/2018	Vendely et al.
9,844,369 B2	12/2017	Huitema et al.	9,924,947 B2	3/2018	Shelton, IV et al.
9,844,372 B2	12/2017	Shelton, IV et al.	9,924,961 B2	3/2018	Shelton, IV et al.
9,844,373 B2	12/2017	Swayze et al.	9,931,106 B2	4/2018	Au et al.
9,844,374 B2	12/2017	Lytle, IV et al.	9,931,116 B2	4/2018	Racenet et al.
9,844,375 B2	12/2017	Overmyer et al.	9,931,118 B2	4/2018	Shelton, IV et al.
9,844,376 B2	12/2017	Baxter, III et al.	9,936,949 B2	4/2018	Measamer et al.
9,844,379 B2	12/2017	Shelton, IV et al.	9,936,950 B2	4/2018	Shelton, IV et al.
9,848,871 B2	12/2017	Harris et al.	9,936,951 B2	4/2018	Hufnagel et al.
9,848,873 B2	12/2017	Shelton, IV	9,936,954 B2	4/2018	Shelton, IV et al.
9,848,875 B2	12/2017	Aronhalt et al.	9,937,626 B2	4/2018	Rockrohr
9,848,877 B2	12/2017	Shelton, IV et al.	9,943,309 B2	4/2018	Shelton, IV et al.
9,850,994 B2	12/2017	Schena	9,943,310 B2	4/2018	Harris et al.
9,855,039 B2	1/2018	Racenet et al.	9,943,312 B2	4/2018	Posada et al.
9,855,040 B2	1/2018	Kostrzewski	D819,072 S	5/2018	Clediere
9,855,662 B2	1/2018	Ruiz Morales et al.	9,955,954 B2	5/2018	Destoumieux et al.
9,861,261 B2	1/2018	Shahinian	9,955,965 B2	5/2018	Chen et al.
9,861,359 B2	1/2018	Shelton, IV et al.	9,955,966 B2	5/2018	Zergiebel
9,861,361 B2	1/2018	Aronhalt et al.	9,962,129 B2	5/2018	Jerebko et al.
9,861,362 B2	1/2018	Whitman et al.	9,962,157 B2	5/2018	Sapre
9,861,382 B2	1/2018	Smith et al.	9,962,158 B2	5/2018	Hall et al.
9,861,446 B2	1/2018	Lang	9,962,159 B2	5/2018	Heinrich et al.
9,867,612 B2	1/2018	Parihar et al.	9,962,161 B2	5/2018	Scheib et al.
9,867,615 B2	1/2018	Fanelli et al.	9,968,354 B2	5/2018	Shelton, IV et al.
9,867,618 B2	1/2018	Hall et al.	9,968,355 B2	5/2018	Shelton, IV et al.
9,867,620 B2	1/2018	Fischvogt et al.	9,968,356 B2	5/2018	Shelton, IV et al.
9,868,198 B2	1/2018	Nicholas et al.	9,968,397 B2	5/2018	Taylor et al.
9,872,682 B2	1/2018	Hess et al.	9,974,529 B2	5/2018	Shelton, IV et al.
9,872,683 B2	1/2018	Hopkins et al.	9,974,538 B2	5/2018	Baxter et al.
9,872,684 B2	1/2018	Hall et al.	9,974,539 B2	5/2018	Yates et al.
9,872,722 B2	1/2018	Lech	9,974,541 B2	5/2018	Calderoni
9,877,721 B2	1/2018	Schellin et al.	9,974,542 B2	5/2018	Hodgkinson
9,877,723 B2	1/2018	Hall et al.	9,980,713 B2	5/2018	Aronhalt et al.
D810,099 S	2/2018	Riedel	9,980,724 B2	5/2018	Farascioni et al.
9,883,843 B2	2/2018	Garlow	9,980,729 B2	5/2018	Moore et al.
9,883,860 B2	2/2018	Leimbach	9,980,769 B2	5/2018	Trees et al.
9,883,861 B2	2/2018	Shelton, IV et al.	D819,680 S *	6/2018	Nguyen D14/487
9,884,456 B2	2/2018	Schellin et al.	D819,682 S	6/2018	Howard et al.
9,888,919 B2	2/2018	Leimbach et al.	D819,684 S	6/2018	Dart
9,888,921 B2	2/2018	Williams et al.	D820,307 S	6/2018	Jian et al.
9,888,924 B2	2/2018	Ebersole et al.	D820,867 S	6/2018	Dickens et al.
9,889,230 B2	2/2018	Bennett et al.	9,987,000 B2	6/2018	Shelton, IV et al.
9,895,147 B2	2/2018	Shelton, IV	9,987,003 B2	6/2018	Timm et al.
9,895,148 B2	2/2018	Shelton, IV et al.	9,987,006 B2	6/2018	Morgan et al.
9,895,813 B2	2/2018	Blumenkranz et al.	9,987,095 B2	6/2018	Chowaniec et al.
9,901,339 B2	2/2018	Farascioni	9,987,099 B2	6/2018	Chen et al.
9,901,341 B2	2/2018	Kostrzewski	9,993,248 B2	6/2018	Shelton, IV et al.
9,901,342 B2	2/2018	Shelton, IV et al.	9,993,258 B2	6/2018	Shelton, IV et al.
9,901,344 B2	2/2018	Moore et al.	9,999,408 B2	6/2018	Boudreaux et al.
9,901,345 B2	2/2018	Moore et al.	9,999,423 B2	6/2018	Schuckmann et al.
9,901,346 B2	2/2018	Moore et al.	9,999,426 B2	6/2018	Moore et al.
9,901,406 B2	2/2018	State et al.	9,999,431 B2	6/2018	Shelton, IV et al.
9,901,412 B2	2/2018	Lathrop et al.	9,999,472 B2	6/2018	Weir et al.
D813,899 S *	3/2018	Erant D14/487	10,004,497 B2	6/2018	Overmyer et al.
9,907,456 B2	3/2018	Miyoshi	10,004,498 B2	6/2018	Morgan et al.
9,907,553 B2	3/2018	Cole et al.	10,004,500 B2	6/2018	Shelton, IV et al.
9,907,600 B2	3/2018	Stulen et al.	10,004,501 B2	6/2018	Shelton, IV et al.
9,907,620 B2	3/2018	Shelton, IV et al.	10,004,505 B2	6/2018	Moore et al.
9,913,642 B2	3/2018	Leimbach et al.	10,004,506 B2	6/2018	Shelton, IV et al.
9,913,644 B2	3/2018	McCuen	D822,206 S	7/2018	Shelton, IV et al.
9,913,646 B2	3/2018	Shelton, IV	10,010,322 B2	7/2018	Shelton, IV et al.
9,913,647 B2	3/2018	Weisenburgh, II et al.	10,010,324 B2	7/2018	Huitema et al.
9,913,648 B2	3/2018	Shelton, IV et al.	10,013,049 B2	7/2018	Leimbach et al.
9,913,694 B2	3/2018	Brisson	10,016,199 B2	7/2018	Baber et al.
			10,016,656 B2	7/2018	Devor et al.
			10,022,125 B2	7/2018	(Prommersberger) Stopek et al.
			10,024,407 B2	7/2018	Aranyi et al.
			10,028,742 B2	7/2018	Shelton, IV et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

10,028,743 B2	7/2018	Shelton, IV et al.	10,130,361 B2	11/2018	Yates et al.
10,028,744 B2	7/2018	Shelton, IV et al.	10,130,363 B2	11/2018	Huitema et al.
10,028,761 B2	7/2018	Leimbach et al.	10,130,366 B2	11/2018	Shelton, IV et al.
10,029,125 B2	7/2018	Shapiro et al.	10,130,367 B2	11/2018	Cappola et al.
10,034,344 B2	7/2018	Yoshida	10,130,738 B2	11/2018	Shelton, IV et al.
10,034,668 B2	7/2018	Ebner	10,130,830 B2	11/2018	Miret Carceller et al.
D826,405 S	8/2018	Shelton, IV et al.	10,133,248 B2	11/2018	Fitzsimmons et al.
10,039,440 B2	8/2018	Fenech et al.	10,135,242 B2	11/2018	Baber et al.
10,039,529 B2	8/2018	Kerr et al.	10,136,879 B2	11/2018	Ross et al.
10,039,532 B2	8/2018	Srinivas et al.	10,136,887 B2	11/2018	Shelton, IV et al.
10,039,545 B2	8/2018	Sadowski et al.	10,136,889 B2	11/2018	Shelton, IV et al.
10,041,822 B2	8/2018	Zemlok	10,136,890 B2	11/2018	Shelton, IV et al.
10,045,769 B2	8/2018	Aronhalt et al.	10,136,891 B2	11/2018	Shelton, IV et al.
10,045,776 B2	8/2018	Shelton, IV et al.	D835,659 S	12/2018	Anzures et al.
10,045,778 B2	8/2018	Yates et al.	D836,124 S	12/2018	Fan
10,045,779 B2	8/2018	Savage et al.	10,143,474 B2	12/2018	Bucciaglia et al.
10,045,781 B2	8/2018	Cropper et al.	10,149,679 B2	12/2018	Shelton, IV et al.
10,052,044 B2	8/2018	Shelton, IV et al.	10,149,680 B2	12/2018	Parihar et al.
10,052,099 B2	8/2018	Morgan et al.	10,149,682 B2	12/2018	Shelton, IV et al.
10,052,100 B2	8/2018	Morgan et al.	10,149,683 B2	12/2018	Smith et al.
10,052,102 B2	8/2018	Baxter, III et al.	10,149,712 B2	12/2018	Manwaring et al.
10,052,104 B2	8/2018	Shelton, IV et al.	10,154,841 B2	12/2018	Weaner et al.
10,052,164 B2	8/2018	Overmyer	10,159,481 B2	12/2018	Whitman et al.
10,058,317 B2	8/2018	Fan et al.	10,159,482 B2	12/2018	Swayze et al.
10,058,327 B2	8/2018	Weisenburgh, II et al.	10,159,483 B2	12/2018	Beckman et al.
10,058,373 B2	8/2018	Takashino et al.	10,163,589 B2	12/2018	Zergiebel et al.
10,058,395 B2	8/2018	Devengenzo et al.	D837,244 S	1/2019	Kuo et al.
10,058,963 B2	8/2018	Shelton, IV et al.	D837,245 S	1/2019	Kuo et al.
10,064,620 B2	9/2018	Gettinger et al.	10,166,025 B2	1/2019	Leimbach et al.
10,064,621 B2	9/2018	Kerr et al.	10,166,026 B2	1/2019	Shelton, IV et al.
10,064,624 B2	9/2018	Shelton, IV et al.	10,172,611 B2	1/2019	Shelton, IV et al.
10,064,639 B2	9/2018	Ishida et al.	10,172,615 B2	1/2019	Marczyk et al.
10,064,649 B2	9/2018	Golebieski et al.	10,172,616 B2	1/2019	Murray et al.
10,064,688 B2	9/2018	Shelton, IV et al.	10,172,617 B2	1/2019	Shelton, IV et al.
10,070,861 B2	9/2018	Spivey et al.	10,172,619 B2	1/2019	Harris et al.
10,070,863 B2	9/2018	Swayze et al.	10,172,620 B2	1/2019	Harris et al.
10,071,452 B2	9/2018	Shelton, IV et al.	10,172,636 B2	1/2019	Stulen et al.
10,076,325 B2	9/2018	Huang et al.	10,175,127 B2	1/2019	Collins et al.
10,076,326 B2	9/2018	Yates et al.	10,178,992 B2	1/2019	Wise et al.
10,076,340 B2	9/2018	Belagali et al.	10,180,463 B2	1/2019	Beckman et al.
D831,209 S	10/2018	Huitema et al.	10,182,813 B2	1/2019	Leimbach et al.
D831,676 S	10/2018	Park et al.	10,182,815 B2	1/2019	Williams et al.
D832,301 S	10/2018	Smith	10,182,816 B2	1/2019	Shelton, IV et al.
10,085,624 B2	10/2018	Isoda et al.	10,182,818 B2	1/2019	Hensel et al.
10,085,643 B2	10/2018	Bandic et al.	10,182,819 B2	1/2019	Shelton, IV
10,085,728 B2	10/2018	Jogasaki et al.	10,188,385 B2	1/2019	Kerr et al.
10,085,748 B2	10/2018	Morgan et al.	10,188,393 B2	1/2019	Smith et al.
10,085,749 B2	10/2018	Cappola et al.	10,188,394 B2	1/2019	Shelton, IV et al.
10,085,751 B2	10/2018	Overmyer et al.	D839,900 S	2/2019	Gan
10,085,754 B2	10/2018	Sniffin et al.	D841,667 S	2/2019	Coren
10,085,806 B2	10/2018	Hagn et al.	10,194,801 B2	2/2019	Elhawary et al.
10,092,292 B2	10/2018	Boudreaux et al.	10,194,904 B2	2/2019	Viola et al.
10,098,635 B2	10/2018	Burbank	10,194,907 B2	2/2019	Marczyk et al.
10,098,636 B2	10/2018	Shelton, IV et al.	10,194,910 B2	2/2019	Shelton, IV et al.
10,098,640 B2	10/2018	Bertolero et al.	10,194,913 B2	2/2019	Nalagatla et al.
10,098,642 B2	10/2018	Baxter, III et al.	10,194,976 B2	2/2019	Boudreaux
10,099,303 B2	10/2018	Yoshida et al.	10,194,992 B2	2/2019	Robinson
10,101,861 B2	10/2018	Kiyoto	10,201,348 B2	2/2019	Scheib et al.
10,105,128 B2	10/2018	Cooper et al.	10,201,349 B2	2/2019	Leimbach et al.
10,105,136 B2	10/2018	Yates et al.	10,201,363 B2	2/2019	Shelton, IV
10,105,139 B2	10/2018	Yates et al.	10,201,364 B2	2/2019	Leimbach et al.
10,105,140 B2	10/2018	Malinouskas et al.	10,201,365 B2	2/2019	Boudreaux et al.
10,106,932 B2	10/2018	Anderson et al.	10,201,381 B2	2/2019	Zergiebel et al.
10,111,657 B2	10/2018	McCuen	10,206,605 B2	2/2019	Shelton, IV et al.
10,111,679 B2	10/2018	Baber et al.	10,206,676 B2	2/2019	Shelton, IV
10,111,698 B2	10/2018	Scheib et al.	10,206,677 B2	2/2019	Harris et al.
10,111,702 B2	10/2018	Kostrzewski	10,206,678 B2	2/2019	Shelton, IV et al.
10,117,649 B2	11/2018	Baxter et al.	10,206,748 B2	2/2019	Burbank
10,117,652 B2	11/2018	Schmid et al.	10,210,244 B1	2/2019	Branavan et al.
10,117,653 B2	11/2018	Leimbach et al.	10,211,586 B2	2/2019	Adams et al.
10,117,654 B2	11/2018	Ingmanson et al.	10,213,198 B2	2/2019	Aronhalt et al.
10,123,798 B2	11/2018	Baxter, III et al.	10,213,201 B2	2/2019	Shelton, IV et al.
10,124,493 B2	11/2018	Rothfuss et al.	10,213,202 B2	2/2019	Flanagan et al.
10,130,352 B2	11/2018	Widenhouse et al.	10,213,203 B2	2/2019	Swayze et al.
10,130,359 B2	11/2018	Hess et al.	10,213,262 B2	2/2019	Shelton, IV et al.
			D842,328 S	3/2019	Jian et al.
			10,219,811 B2	3/2019	Haider et al.
			10,219,832 B2	3/2019	Bagwell et al.
			10,220,522 B2	3/2019	Rockrohr

(56)

References Cited

U.S. PATENT DOCUMENTS

10,226,239 B2	3/2019	Nicholas et al.	D850,617 S	6/2019	Shelton, IV et al.
10,226,249 B2	3/2019	Jaworek et al.	D851,676 S	6/2019	Foss et al.
10,226,250 B2	3/2019	Beckman et al.	D851,762 S	6/2019	Shelton, IV et al.
10,226,251 B2	3/2019	Scheib et al.	10,307,159 B2	6/2019	Harris et al.
10,226,274 B2	3/2019	Worrell et al.	10,307,160 B2	6/2019	Vendely et al.
10,231,634 B2	3/2019	Zand et al.	10,307,161 B2	6/2019	Jankowski
10,231,653 B2	3/2019	Bohm et al.	10,307,163 B2	6/2019	Moore et al.
10,231,734 B2	3/2019	Thompson et al.	10,307,170 B2 *	6/2019	Parfett A61B 17/1626
10,231,794 B2	3/2019	Shelton, IV et al.	10,307,202 B2	6/2019	Smith et al.
10,238,385 B2	3/2019	Yates et al.	10,314,559 B2	6/2019	Razzaque et al.
10,238,386 B2	3/2019	Overmyer et al.	10,314,577 B2	6/2019	Laurent et al.
10,238,387 B2	3/2019	Yates et al.	10,314,582 B2	6/2019	Shelton, IV et al.
10,238,389 B2	3/2019	Yates et al.	10,314,587 B2	6/2019	Harris et al.
10,238,390 B2	3/2019	Harris et al.	10,314,588 B2	6/2019	Turner et al.
10,238,391 B2	3/2019	Leimbach et al.	10,314,589 B2	6/2019	Shelton, IV et al.
D844,666 S	4/2019	Espeleta et al.	10,314,590 B2	6/2019	Shelton, IV et al.
D844,667 S	4/2019	Espeleta et al.	10,315,566 B2	6/2019	Choi et al.
D845,342 S	4/2019	Espeleta et al.	10,321,907 B2	6/2019	Shelton, IV et al.
10,245,027 B2	4/2019	Shelton, IV et al.	10,321,909 B2	6/2019	Shelton, IV et al.
10,245,028 B2	4/2019	Shelton, IV et al.	10,321,927 B2	6/2019	Hinman
10,245,029 B2	4/2019	Hunter et al.	10,327,743 B2	6/2019	St. Goar et al.
10,245,030 B2	4/2019	Hunter et al.	10,327,764 B2	6/2019	Harris et al.
10,245,032 B2	4/2019	Shelton, IV	10,327,765 B2	6/2019	Timm et al.
10,245,033 B2	4/2019	Overmyer et al.	10,327,767 B2	6/2019	Shelton, IV et al.
10,245,034 B2	4/2019	Shelton, IV et al.	10,327,769 B2	6/2019	Overmyer et al.
10,245,035 B2	4/2019	Swayze et al.	10,327,776 B2	6/2019	Harris et al.
10,245,058 B2	4/2019	Omori et al.	10,327,777 B2	6/2019	Harris et al.
10,251,648 B2	4/2019	Harris et al.	D854,032 S	7/2019	Jones et al.
10,251,649 B2	4/2019	Schellin et al.	D854,151 S	7/2019	Shelton, IV et al.
10,251,725 B2	4/2019	Valentine et al.	10,335,144 B2	7/2019	Shelton, IV et al.
10,258,322 B2	4/2019	Fanton et al.	10,335,145 B2	7/2019	Harris et al.
10,258,330 B2	4/2019	Shelton, IV et al.	10,335,147 B2	7/2019	Rector et al.
10,258,331 B2	4/2019	Shelton, IV et al.	10,335,148 B2	7/2019	Shelton, IV et al.
10,258,332 B2	4/2019	Schmid et al.	10,335,149 B2	7/2019	Baxter, III et al.
10,258,333 B2	4/2019	Shelton, IV et al.	10,335,150 B2	7/2019	Shelton, IV
10,258,336 B2	4/2019	Baxter, III et al.	10,335,151 B2	7/2019	Shelton, IV et al.
10,258,418 B2	4/2019	Shelton, IV et al.	10,337,148 B2	7/2019	Rouse et al.
10,264,797 B2	4/2019	Zhang et al.	10,342,533 B2	7/2019	Shelton, IV et al.
10,265,065 B2	4/2019	Shelton, IV et al.	10,342,535 B2	7/2019	Scheib et al.
10,265,067 B2	4/2019	Yates et al.	10,342,541 B2	7/2019	Shelton, IV et al.
10,265,068 B2	4/2019	Harris et al.	10,342,543 B2	7/2019	Shelton, IV et al.
10,265,072 B2	4/2019	Shelton, IV et al.	10,342,623 B2	7/2019	Huelman et al.
10,265,073 B2	4/2019	Scheib et al.	10,349,939 B2	7/2019	Shelton, IV et al.
10,265,074 B2	4/2019	Shelton, IV et al.	10,357,246 B2	7/2019	Shelton, IV et al.
10,265,090 B2	4/2019	Ingmanson et al.	10,357,247 B2	7/2019	Shelton, IV et al.
10,271,844 B2	4/2019	Valentine et al.	10,357,248 B2	7/2019	Dallessandro et al.
10,271,845 B2	4/2019	Shelton, IV	10,357,252 B2	7/2019	Harris et al.
10,271,846 B2	4/2019	Shelton, IV et al.	10,363,031 B2	7/2019	Alexander, III et al.
10,271,849 B2	4/2019	Vendely et al.	10,363,033 B2	7/2019	Timm et al.
10,271,851 B2	4/2019	Shelton, IV et al.	10,363,036 B2	7/2019	Yates et al.
D847,989 S	5/2019	Shelton, IV et al.	10,363,037 B2	7/2019	Aronhalt et al.
D848,473 S	5/2019	Zhu et al.	10,363,045 B2	7/2019	Whitfield et al.
D849,046 S	5/2019	Kuo et al.	D855,634 S	8/2019	Kim
10,278,696 B2	5/2019	Gurumurthy et al.	D856,359 S *	8/2019	Huang D14/486
10,278,697 B2	5/2019	Shelton, IV et al.	10,368,838 B2	8/2019	Williams et al.
10,278,702 B2	5/2019	Shelton, IV et al.	10,368,861 B2	8/2019	Baxter, III et al.
10,278,703 B2	5/2019	Nativ et al.	10,368,863 B2	8/2019	Timm et al.
10,278,707 B2	5/2019	Thompson et al.	10,368,864 B2 *	8/2019	Harris A61B 17/068
10,278,722 B2	5/2019	Shelton, IV et al.	10,368,865 B2	8/2019	Harris et al.
10,278,780 B2	5/2019	Shelton, IV	10,368,867 B2	8/2019	Harris et al.
10,285,694 B2	5/2019	Viola et al.	10,368,892 B2	8/2019	Stulen et al.
10,285,695 B2	5/2019	Jaworek et al.	10,376,262 B2	8/2019	Zemlok et al.
10,285,699 B2	5/2019	Vendely et al.	10,376,263 B2	8/2019	Morgan et al.
10,285,705 B2	5/2019	Shelton, IV et al.	10,383,626 B2	8/2019	Soltz
10,292,701 B2	5/2019	Scheib et al.	10,383,628 B2	8/2019	Kang et al.
10,292,704 B2	5/2019	Harris et al.	10,383,629 B2	8/2019	Ross et al.
10,292,707 B2	5/2019	Shelton, IV et al.	10,383,630 B2	8/2019	Shelton, IV et al.
10,293,100 B2	5/2019	Shelton, IV et al.	10,383,633 B2	8/2019	Shelton, IV et al.
10,293,553 B2	5/2019	Racenet et al.	10,383,634 B2	8/2019	Shelton, IV et al.
10,299,787 B2	5/2019	Shelton, IV	10,390,823 B2	8/2019	Shelton, IV et al.
10,299,788 B2	5/2019	Heinrich et al.	10,390,825 B2	8/2019	Shelton, IV et al.
10,299,792 B2	5/2019	Huitema et al.	10,390,828 B2	8/2019	Vendely et al.
10,299,817 B2	5/2019	Shelton, IV et al.	10,390,829 B2	8/2019	Eckert et al.
10,299,818 B2	5/2019	Riva	10,390,830 B2	8/2019	Schulz
10,299,878 B2	5/2019	Shelton, IV et al.	10,390,841 B2	8/2019	Shelton, IV et al.
			10,390,897 B2	8/2019	Kostrzewski
			D860,219 S	9/2019	Rasmussen et al.
			10,398,433 B2	9/2019	Boudreaux et al.
			10,398,434 B2	9/2019	Shelton, IV et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

10,398,436 B2	9/2019	Shelton, IV et al.	10,478,181 B2	11/2019	Shelton, IV et al.
10,405,854 B2	9/2019	Schmid et al.	10,478,182 B2	11/2019	Taylor
10,405,857 B2	9/2019	Shelton, IV et al.	10,478,188 B2	11/2019	Harris et al.
10,405,859 B2	9/2019	Harris et al.	10,478,189 B2	11/2019	Bear et al.
10,405,863 B2	9/2019	Wise et al.	10,478,190 B2	11/2019	Miller et al.
10,405,914 B2	9/2019	Manwaring et al.	10,478,207 B2	11/2019	Lathrop
10,405,932 B2	9/2019	Overmyer	10,485,536 B2	11/2019	Ming et al.
10,413,291 B2	9/2019	Worthington et al.	10,485,537 B2	11/2019	Yates et al.
10,413,293 B2	9/2019	Shelton, IV et al.	10,485,539 B2	11/2019	Shelton, IV et al.
10,413,294 B2	9/2019	Shelton, IV et al.	10,485,541 B2	11/2019	Shelton, IV et al.
10,413,297 B2	9/2019	Harris et al.	10,485,542 B2	11/2019	Shelton, IV et al.
10,413,370 B2	9/2019	Yates et al.	10,485,543 B2	11/2019	Shelton, IV et al.
10,413,373 B2	9/2019	Yates et al.	10,485,546 B2	11/2019	Shelton, IV et al.
10,420,548 B2	9/2019	Whitman et al.	10,485,547 B2	11/2019	Shelton, IV et al.
10,420,549 B2	9/2019	Yates et al.	D869,655 S	12/2019	Shelton, IV et al.
10,420,550 B2	9/2019	Shelton, IV	D870,742 S *	12/2019	Cornell D14/485
10,420,552 B2	9/2019	Shelton, IV et al.	10,492,783 B2	12/2019	Shelton, IV et al.
10,420,553 B2	9/2019	Shelton, IV et al.	10,492,785 B2	12/2019	Overmyer et al.
10,420,555 B2	9/2019	Shelton, IV et al.	10,492,787 B2	12/2019	Smith et al.
10,420,558 B2	9/2019	Nalagatla et al.	10,492,814 B2	12/2019	Snow et al.
10,420,559 B2	9/2019	Marczyk et al.	10,492,847 B2	12/2019	Godara et al.
10,420,560 B2	9/2019	Shelton, IV et al.	10,492,851 B2	12/2019	Hughett, Sr. et al.
10,420,561 B2	9/2019	Shelton, IV et al.	10,498,269 B2	12/2019	Zemlok et al.
10,420,577 B2	9/2019	Chowaniec et al.	10,499,890 B2	12/2019	Shelton, IV et al.
D861,707 S *	10/2019	Yang D14/485	10,499,914 B2	12/2019	Huang et al.
D863,343 S *	10/2019	Mazlish D14/488	10,499,918 B2	12/2019	Schellin et al.
D864,388 S	10/2019	Barber	10,500,309 B2	12/2019	Shah et al.
10,426,463 B2	10/2019	Shelton, IV et al.	10,512,461 B2	12/2019	Gupta et al.
10,426,467 B2	10/2019	Miller et al.	10,517,590 B2	12/2019	Giordano et al.
10,426,468 B2	10/2019	Contini et al.	10,517,594 B2	12/2019	Shelton, IV et al.
10,426,469 B2	10/2019	Shelton, IV et al.	10,517,595 B2	12/2019	Hunter et al.
10,426,471 B2	10/2019	Shelton, IV et al.	10,517,596 B2	12/2019	Hunter et al.
10,426,476 B2	10/2019	Harris et al.	10,517,599 B2	12/2019	Baxter, III et al.
10,426,477 B2	10/2019	Harris et al.	10,517,682 B2	12/2019	Giordano et al.
10,426,478 B2	10/2019	Shelton, IV et al.	10,524,784 B2	1/2020	Kostrzewski
10,426,481 B2	10/2019	Aronhalt et al.	10,524,787 B2	1/2020	Shelton, IV et al.
10,433,837 B2	10/2019	Worthington et al.	10,524,788 B2	1/2020	Vendely et al.
10,433,839 B2	10/2019	Scheib et al.	10,524,789 B2	1/2020	Swayze et al.
10,433,840 B2	10/2019	Shelton, IV et al.	10,524,790 B2	1/2020	Shelton, IV et al.
10,433,844 B2	10/2019	Shelton, IV et al.	10,524,795 B2	1/2020	Nalagatla et al.
10,433,845 B2	10/2019	Baxter, III et al.	10,531,874 B2	1/2020	Morgan et al.
10,433,846 B2	10/2019	Vendely et al.	10,531,887 B2	1/2020	Shelton, IV et al.
10,433,849 B2	10/2019	Shelton, IV et al.	10,537,324 B2	1/2020	Shelton, IV et al.
10,433,918 B2	10/2019	Shelton, IV et al.	10,537,325 B2	1/2020	Bakos et al.
10,441,279 B2	10/2019	Shelton, IV et al.	2001/0000531 A1	4/2001	Casscells et al.
10,441,280 B2	10/2019	Timm et al.	2001/0025183 A1	9/2001	Shahidi
10,441,281 B2	10/2019	Shelton, IV et al.	2001/0025184 A1	9/2001	Messerly
10,441,285 B2	10/2019	Shelton, IV et al.	2001/0034530 A1	10/2001	Malackowski et al.
10,441,286 B2	10/2019	Shelton, IV et al.	2002/0014510 A1	2/2002	Richter et al.
10,441,345 B2	10/2019	Aldridge et al.	2002/0022810 A1	2/2002	Urich
10,441,369 B2	10/2019	Shelton, IV et al.	2002/0022836 A1	2/2002	Goble et al.
10,448,948 B2	10/2019	Shelton, IV et al.	2002/0022861 A1	2/2002	Jacobs et al.
10,448,950 B2	10/2019	Shelton, IV et al.	2002/0029032 A1	3/2002	Arkin
10,448,952 B2	10/2019	Shelton, IV et al.	2002/0029036 A1	3/2002	Goble et al.
10,456,122 B2	10/2019	Koltz et al.	2002/0042620 A1	4/2002	Julian et al.
10,456,132 B2	10/2019	Gettinger et al.	2002/0087048 A1	7/2002	Brock et al.
10,456,133 B2	10/2019	Yates et al.	2002/0091374 A1	7/2002	Cooper
10,456,137 B2	10/2019	Vendely et al.	2002/0095175 A1	7/2002	Brock et al.
10,456,140 B2	10/2019	Shelton, IV et al.	2002/0103494 A1	8/2002	Pacey
D865,796 S *	11/2019	Xu D14/488	2002/0116063 A1	8/2002	Giannetti et al.
10,463,367 B2	11/2019	Kostrzewski et al.	2002/0117534 A1	8/2002	Green et al.
10,463,369 B2	11/2019	Shelton, IV et al.	2002/0127265 A1	9/2002	Bowman et al.
10,463,370 B2	11/2019	Yates et al.	2002/0128633 A1	9/2002	Brock et al.
10,463,372 B2	11/2019	Shelton, IV et al.	2002/0134811 A1	9/2002	Napier et al.
10,463,373 B2	11/2019	Mozdzierz et al.	2002/0135474 A1	9/2002	Sylliassen
10,463,382 B2	11/2019	Ingmanson et al.	2002/0143340 A1	10/2002	Kaneko
10,463,383 B2	11/2019	Shelton, IV et al.	2002/0151770 A1	10/2002	Noll et al.
10,463,384 B2	11/2019	Shelton, IV et al.	2002/0158593 A1	10/2002	Henderson et al.
10,470,762 B2	11/2019	Leimbach et al.	2002/0185514 A1	12/2002	Adams et al.
10,470,763 B2	11/2019	Yates et al.	2002/0188170 A1	12/2002	Santamore et al.
10,470,764 B2	11/2019	Baxter, III et al.	2002/0188287 A1	12/2002	Zvuloni et al.
10,470,768 B2	11/2019	Harris et al.	2003/0009193 A1	1/2003	Corsaro
10,470,769 B2	11/2019	Shelton, IV et al.	2003/0011245 A1	1/2003	Fiebig
10,471,576 B2	11/2019	Totsu	2003/0012805 A1	1/2003	Chen et al.
10,471,607 B2	11/2019	Butt et al.	2003/0040670 A1	2/2003	Govari
			2003/0045835 A1	3/2003	Anderson et al.
			2003/0066858 A1	4/2003	Holgerson
			2003/0078647 A1	4/2003	Vallana et al.
			2003/0083648 A1	5/2003	Wang et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

- | | | | |
|--------------|-----|---------|---------------------|
| 2003/0084983 | A1 | 5/2003 | Rangachari et al. |
| 2003/0093103 | A1 | 5/2003 | Malackowski et al. |
| 2003/0094356 | A1 | 5/2003 | Waldron |
| 2003/0096158 | A1 | 5/2003 | Takano et al. |
| 2003/0114851 | A1 | 6/2003 | Truckai et al. |
| 2003/0121586 | A1 | 7/2003 | Mitra et al. |
| 2003/0139741 | A1 | 7/2003 | Goble et al. |
| 2003/0149406 | A1 | 8/2003 | Martineau et al. |
| 2003/0153908 | A1 | 8/2003 | Goble et al. |
| 2003/0153968 | A1 | 8/2003 | Geis et al. |
| 2003/0163085 | A1 | 8/2003 | Tanner et al. |
| 2003/0164172 | A1 | 9/2003 | Chumas et al. |
| 2003/0181900 | A1 | 9/2003 | Long |
| 2003/0190584 | A1 | 10/2003 | Heasley |
| 2003/0195387 | A1 | 10/2003 | Kortenbach et al. |
| 2003/0205029 | A1 | 11/2003 | Chapolini et al. |
| 2003/0212005 | A1 | 11/2003 | Petito et al. |
| 2003/0216732 | A1 | 11/2003 | Truckai et al. |
| 2003/0236505 | A1 | 12/2003 | Bonadio et al. |
| 2004/0006335 | A1 | 1/2004 | Garrison |
| 2004/0006340 | A1 | 1/2004 | Latterell et al. |
| 2004/0007608 | A1 | 1/2004 | Ehrenfels et al. |
| 2004/0024457 | A1 | 2/2004 | Boyce et al. |
| 2004/0028502 | A1 | 2/2004 | Cummins |
| 2004/0030333 | A1 | 2/2004 | Goble |
| 2004/0034357 | A1 | 2/2004 | Beane et al. |
| 2004/0044295 | A1 | 3/2004 | Reinert et al. |
| 2004/0044364 | A1 | 3/2004 | DeVries et al. |
| 2004/0049121 | A1 | 3/2004 | Yaron |
| 2004/0049172 | A1 | 3/2004 | Root et al. |
| 2004/0059362 | A1 | 3/2004 | Knodel et al. |
| 2004/0068161 | A1 | 4/2004 | Couvillon |
| 2004/0068224 | A1 | 4/2004 | Couvillon et al. |
| 2004/0068307 | A1 | 4/2004 | Goble |
| 2004/0070369 | A1 | 4/2004 | Sakakibara |
| 2004/0073222 | A1 | 4/2004 | Koseki |
| 2004/0078037 | A1 | 4/2004 | Batchelor et al. |
| 2004/0082952 | A1 | 4/2004 | Dycus et al. |
| 2004/0085180 | A1 | 5/2004 | Juang |
| 2004/0093024 | A1 | 5/2004 | Lousararian et al. |
| 2004/0098040 | A1 | 5/2004 | Taniguchi et al. |
| 2004/0101822 | A1 | 5/2004 | Wiesner et al. |
| 2004/0102783 | A1 | 5/2004 | Sutterlin et al. |
| 2004/0108357 | A1 | 6/2004 | Milliman et al. |
| 2004/0110439 | A1 | 6/2004 | Chaikof et al. |
| 2004/0115022 | A1 | 6/2004 | Albertson et al. |
| 2004/0116952 | A1 | 6/2004 | Sakurai et al. |
| 2004/0119185 | A1 | 6/2004 | Chen |
| 2004/0122419 | A1 | 6/2004 | Neuberger |
| 2004/0122423 | A1 | 6/2004 | Dycus et al. |
| 2004/0133095 | A1 | 7/2004 | Dunki-Jacobs et al. |
| 2004/0133189 | A1 | 7/2004 | Sakurai |
| 2004/0143297 | A1 | 7/2004 | Ramsey |
| 2004/0147909 | A1 | 7/2004 | Johnston et al. |
| 2004/0153100 | A1 | 8/2004 | Ahlberg et al. |
| 2004/0158261 | A1 | 8/2004 | Vu |
| 2004/0164123 | A1 | 8/2004 | Racenet et al. |
| 2004/0166169 | A1 | 8/2004 | Malaviya et al. |
| 2004/0167572 | A1 | 8/2004 | Roth et al. |
| 2004/0181219 | A1 | 9/2004 | Goble et al. |
| 2004/0193189 | A1 | 9/2004 | Kortenbach et al. |
| 2004/0197367 | A1 | 10/2004 | Rezania et al. |
| 2004/0199181 | A1 | 10/2004 | Knodel et al. |
| 2004/0204735 | A1 | 10/2004 | Shiroff et al. |
| 2004/0218451 | A1* | 11/2004 | Said |
| | | | G06F 3/0481 |
| | | | 365/222 |
| 2004/0222268 | A1 | 11/2004 | Bilotti et al. |
| 2004/0225186 | A1 | 11/2004 | Horne et al. |
| 2004/0232201 | A1 | 11/2004 | Wenchell et al. |
| 2004/0236352 | A1 | 11/2004 | Wang et al. |
| 2004/0243147 | A1 | 12/2004 | Lipow |
| 2004/0243151 | A1 | 12/2004 | Demmy et al. |
| 2004/0243163 | A1 | 12/2004 | Casiano et al. |
| 2004/0247415 | A1 | 12/2004 | Mangone |
| 2004/0249366 | A1 | 12/2004 | Kunz |
| 2004/0254455 | A1 | 12/2004 | Iddan |
| 2004/0254566 | A1 | 12/2004 | Plicchi et al. |
| 2004/0254590 | A1 | 12/2004 | Hoffman et al. |
| 2004/0260315 | A1 | 12/2004 | Dell et al. |
| 2004/0267310 | A1 | 12/2004 | Racenet et al. |
| 2005/0010158 | A1 | 1/2005 | Brugger et al. |
| 2005/0010213 | A1 | 1/2005 | Stad et al. |
| 2005/0021078 | A1 | 1/2005 | Vleugels et al. |
| 2005/0032511 | A1 | 2/2005 | Malone et al. |
| 2005/0033352 | A1 | 2/2005 | Zepf et al. |
| 2005/0051163 | A1 | 3/2005 | Deem et al. |
| 2005/0054946 | A1 | 3/2005 | Krzyzanowski |
| 2005/0057225 | A1 | 3/2005 | Marquet |
| 2005/0058890 | A1 | 3/2005 | Brazell et al. |
| 2005/0059997 | A1 | 3/2005 | Bauman et al. |
| 2005/0070929 | A1 | 3/2005 | Dallessandro et al. |
| 2005/0075561 | A1 | 4/2005 | Golden |
| 2005/0080342 | A1 | 4/2005 | Gilreath et al. |
| 2005/0085693 | A1 | 4/2005 | Belson et al. |
| 2005/0090817 | A1 | 4/2005 | Phan |
| 2005/0096683 | A1 | 5/2005 | Ellins et al. |
| 2005/0116673 | A1 | 6/2005 | Carl et al. |
| 2005/0124855 | A1 | 6/2005 | Jaffe et al. |
| 2005/0125897 | A1 | 6/2005 | Wyslucha et al. |
| 2005/0130682 | A1 | 6/2005 | Takara et al. |
| 2005/0131173 | A1 | 6/2005 | McDaniel et al. |
| 2005/0131211 | A1 | 6/2005 | Bayley et al. |
| 2005/0131390 | A1 | 6/2005 | Heinrich et al. |
| 2005/0131436 | A1 | 6/2005 | Johnston et al. |
| 2005/0131457 | A1 | 6/2005 | Douglas et al. |
| 2005/0137454 | A1 | 6/2005 | Saadat et al. |
| 2005/0137455 | A1 | 6/2005 | Ewers et al. |
| 2005/0139636 | A1 | 6/2005 | Schwemberger et al. |
| 2005/0143759 | A1 | 6/2005 | Kelly |
| 2005/0143769 | A1 | 6/2005 | White et al. |
| 2005/0145671 | A1 | 7/2005 | Viola |
| 2005/0150928 | A1 | 7/2005 | Kameyama et al. |
| 2005/0154258 | A1 | 7/2005 | Tartaglia et al. |
| 2005/0154406 | A1 | 7/2005 | Bombard et al. |
| 2005/0159778 | A1 | 7/2005 | Heinrich et al. |
| 2005/0165419 | A1 | 7/2005 | Sauer et al. |
| 2005/0169974 | A1 | 8/2005 | Tenerz et al. |
| 2005/0171522 | A1 | 8/2005 | Christopherson |
| 2005/0177176 | A1 | 8/2005 | Gerbi et al. |
| 2005/0177181 | A1 | 8/2005 | Kagan et al. |
| 2005/0177249 | A1 | 8/2005 | Kladakis et al. |
| 2005/0182298 | A1 | 8/2005 | Ikeda et al. |
| 2005/0182443 | A1 | 8/2005 | Jonn et al. |
| 2005/0184121 | A1 | 8/2005 | Heinrich |
| 2005/0186240 | A1 | 8/2005 | Ringeisen et al. |
| 2005/0187545 | A1 | 8/2005 | Hooven et al. |
| 2005/0203550 | A1 | 9/2005 | Laufer et al. |
| 2005/0209614 | A1 | 9/2005 | Fenter et al. |
| 2005/0216055 | A1 | 9/2005 | Scirica et al. |
| 2005/0222587 | A1 | 10/2005 | Jinno et al. |
| 2005/0222611 | A1 | 10/2005 | Weitkamp |
| 2005/0222616 | A1 | 10/2005 | Rethy et al. |
| 2005/0222665 | A1 | 10/2005 | Aranyi |
| 2005/0228224 | A1 | 10/2005 | Okada et al. |
| 2005/0228446 | A1 | 10/2005 | Mooradian et al. |
| 2005/0230453 | A1 | 10/2005 | Viola |
| 2005/0240178 | A1 | 10/2005 | Morley et al. |
| 2005/0245965 | A1 | 11/2005 | Orban, III et al. |
| 2005/0246881 | A1 | 11/2005 | Kelly et al. |
| 2005/0251063 | A1 | 11/2005 | Basude |
| 2005/0256452 | A1 | 11/2005 | DeMarchi et al. |
| 2005/0261676 | A1 | 11/2005 | Hall et al. |
| 2005/0263563 | A1 | 12/2005 | Racenet et al. |
| 2005/0267455 | A1 | 12/2005 | Eggers et al. |
| 2005/0274034 | A1 | 12/2005 | Hayashida et al. |
| 2005/0283188 | A1 | 12/2005 | Loshakove et al. |
| 2006/0008787 | A1 | 1/2006 | Hayman et al. |
| 2006/0015009 | A1 | 1/2006 | Jaffe et al. |
| 2006/0020258 | A1 | 1/2006 | Strauss et al. |
| 2006/0020336 | A1 | 1/2006 | Liddicoat |
| 2006/0025812 | A1 | 2/2006 | Shelton |
| 2006/0041188 | A1 | 2/2006 | Dirusso et al. |
| 2006/0047275 | A1 | 3/2006 | Goble |
| 2006/0049229 | A1 | 3/2006 | Milliman et al. |

(56)

References Cited

U.S. PATENT DOCUMENTS

2006/0052824	A1	3/2006	Ransick et al.	2007/0152612	A1	7/2007	Chen et al.
2006/0052825	A1	3/2006	Ransick et al.	2007/0155010	A1	7/2007	Farnsworth et al.
2006/0064086	A1	3/2006	Odom	2007/0170225	A1	7/2007	Shelton et al.
2006/0079735	A1	4/2006	Martone et al.	2007/0173687	A1	7/2007	Shima et al.
2006/0079879	A1	4/2006	Faller et al.	2007/0173813	A1	7/2007	Odom
2006/0086032	A1	4/2006	Valencic et al.	2007/0175950	A1	8/2007	Shelton et al.
2006/0087746	A1	4/2006	Lipow	2007/0175951	A1	8/2007	Shelton et al.
2006/0089535	A1	4/2006	Raz et al.	2007/0175955	A1	8/2007	Shelton et al.
2006/0097699	A1	5/2006	Kamenoff	2007/0179477	A1	8/2007	Danger
2006/0100643	A1	5/2006	Laufer et al.	2007/0185545	A1	8/2007	Duke
2006/0100649	A1	5/2006	Hart	2007/0187857	A1	8/2007	Riley et al.
2006/0111711	A1	5/2006	Goble	2007/0190110	A1	8/2007	Pameijer et al.
2006/0111723	A1	5/2006	Chapolini et al.	2007/0191868	A1	8/2007	Theroux et al.
2006/0116634	A1	6/2006	Shachar	2007/0194079	A1	8/2007	Hueil et al.
2006/0142772	A1	6/2006	Ralph et al.	2007/0194082	A1	8/2007	Morgan et al.
2006/0154546	A1	7/2006	Murphy et al.	2007/0197954	A1	8/2007	Keenan
2006/0161050	A1	7/2006	Butler et al.	2007/0198039	A1	8/2007	Jones et al.
2006/0161185	A1	7/2006	Saadat et al.	2007/0203510	A1	8/2007	Bettuchi
2006/0167471	A1	7/2006	Phillips	2007/0207010	A1	9/2007	Caspi
2006/0173290	A1	8/2006	Lavallee et al.	2007/0208359	A1	9/2007	Hoffman
2006/0173470	A1	8/2006	Oray et al.	2007/0208375	A1	9/2007	Nishizawa et al.
2006/0176031	A1	8/2006	Forman et al.	2007/0213750	A1	9/2007	Weadock
2006/0178556	A1	8/2006	Hasser et al.	2007/0225562	A1	9/2007	Spivey et al.
2006/0180633	A1	8/2006	Emmons	2007/0233163	A1	10/2007	Bombard et al.
2006/0180634	A1	8/2006	Shelton et al.	2007/0243227	A1	10/2007	Gertner
2006/0185682	A1	8/2006	Marczyk	2007/0244471	A1	10/2007	Malackowski
2006/0199999	A1	9/2006	Ikeda et al.	2007/0246505	A1	10/2007	Pace-Florida et al.
2006/0201989	A1	9/2006	Ojeda	2007/0262592	A1	11/2007	Hwang et al.
2006/0206100	A1	9/2006	Eskridge et al.	2007/0275035	A1	11/2007	Herman et al.
2006/0217729	A1	9/2006	Eskridge et al.	2007/0276409	A1	11/2007	Ortiz et al.
2006/0235368	A1	10/2006	Oz	2007/0279011	A1	12/2007	Jones et al.
2006/0241666	A1	10/2006	Briggs et al.	2007/0286892	A1	12/2007	Herzberg et al.
2006/0244460	A1	11/2006	Weaver	2007/0296286	A1	12/2007	Avenell
2006/0252990	A1	11/2006	Kubach	2008/0003196	A1	1/2008	Jonn et al.
2006/0252993	A1	11/2006	Freed et al.	2008/0015598	A1	1/2008	Prommersberger
2006/0258904	A1	11/2006	Stefanchik et al.	2008/0021486	A1	1/2008	Oyola et al.
2006/0259073	A1	11/2006	Miyamoto et al.	2008/0029570	A1	2/2008	Shelton et al.
2006/0261763	A1	11/2006	Iott et al.	2008/0029573	A1	2/2008	Shelton et al.
2006/0263444	A1	11/2006	Ming et al.	2008/0029574	A1	2/2008	Shelton et al.
2006/0264831	A1	11/2006	Skwarek et al.	2008/0029575	A1	2/2008	Shelton et al.
2006/0264929	A1	11/2006	Goble et al.	2008/0030170	A1	2/2008	Dacquay et al.
2006/0271042	A1	11/2006	Latterell et al.	2008/0039746	A1	2/2008	Hissong et al.
2006/0271102	A1	11/2006	Bosshard et al.	2008/0042861	A1	2/2008	Dacquay et al.
2006/0282064	A1	12/2006	Shimizu et al.	2008/0051833	A1	2/2008	Gramuglia et al.
2006/0284730	A1	12/2006	Schmid et al.	2008/0064921	A1	3/2008	Larkin et al.
2006/0287576	A1	12/2006	Tsuji et al.	2008/0065153	A1	3/2008	Allard et al.
2006/0289602	A1	12/2006	Wales et al.	2008/0071328	A1	3/2008	Haubrich et al.
2006/0291981	A1	12/2006	Viola et al.	2008/0077158	A1	3/2008	Haider et al.
2007/0009570	A1	1/2007	Kim et al.	2008/0078802	A1	4/2008	Hess et al.
2007/0010702	A1	1/2007	Wang et al.	2008/0082114	A1	4/2008	McKenna et al.
2007/0010838	A1	1/2007	Shelton et al.	2008/0082125	A1	4/2008	Murray et al.
2007/0016235	A1	1/2007	Tanaka et al.	2008/0082126	A1	4/2008	Murray et al.
2007/0026039	A1	2/2007	Drumheller et al.	2008/0083807	A1	4/2008	Beardsley et al.
2007/0026040	A1	2/2007	Crawley et al.	2008/0085296	A1	4/2008	Powell et al.
2007/0027468	A1	2/2007	Wales et al.	2008/0086078	A1	4/2008	Powell et al.
2007/0027551	A1	2/2007	Farnsworth et al.	2008/0091072	A1	4/2008	Omori et al.
2007/0043387	A1	2/2007	Vargas et al.	2008/0108443	A1	5/2008	Jinno et al.
2007/0049951	A1	3/2007	Menn	2008/0114250	A1	5/2008	Urbano et al.
2007/0049966	A1	3/2007	Bonadio et al.	2008/0125634	A1	5/2008	Ryan et al.
2007/0051375	A1	3/2007	Milliman	2008/0125749	A1	5/2008	Olson
2007/0055228	A1	3/2007	Berg et al.	2008/0128469	A1	6/2008	Dallessandro et al.
2007/0073341	A1	3/2007	Smith et al.	2008/0129253	A1	6/2008	Shiue et al.
2007/0073389	A1	3/2007	Bolduc et al.	2008/0135600	A1	6/2008	Hiranuma et al.
2007/0078328	A1	4/2007	Ozaki et al.	2008/0140115	A1	6/2008	Stopek
2007/0078484	A1	4/2007	Talarico et al.	2008/0140159	A1	6/2008	Bornhott et al.
2007/0084897	A1	4/2007	Shelton et al.	2008/0154299	A1	6/2008	Livneh
2007/0088376	A1	4/2007	Zacharias	2008/0154335	A1	6/2008	Thrope et al.
2007/0090788	A1	4/2007	Hansford et al.	2008/0169328	A1	7/2008	Shelton
2007/0093869	A1	4/2007	Bloom et al.	2008/0169332	A1	7/2008	Shelton et al.
2007/0102472	A1	5/2007	Shelton	2008/0169333	A1	7/2008	Shelton et al.
2007/0106113	A1	5/2007	Ravo	2008/0172087	A1	7/2008	Fuchs et al.
2007/0106317	A1	5/2007	Shelton et al.	2008/0177392	A1	7/2008	Williams et al.
2007/0134251	A1	6/2007	Ashkenazi et al.	2008/0190989	A1	8/2008	Crews et al.
2007/0135686	A1	6/2007	Pruitt et al.	2008/0196253	A1	8/2008	Ezra et al.
2007/0135803	A1	6/2007	Belson	2008/0196419	A1	8/2008	Dube
				2008/0197167	A1	8/2008	Viola et al.
				2008/0200755	A1	8/2008	Bakos
				2008/0200762	A1	8/2008	Stokes et al.
				2008/0200835	A1	8/2008	Monson et al.

US D890,784 S

Page 37

(56)

References Cited

U.S. PATENT DOCUMENTS

2008/0200911	A1	8/2008	Long	2009/0308907	A1	12/2009	Nalagatla et al.
2008/0200933	A1	8/2008	Bakos et al.	2009/0318557	A1	12/2009	Stockel
2008/0200934	A1	8/2008	Fox	2009/0325859	A1	12/2009	Ameer et al.
2008/0206186	A1	8/2008	Butler et al.	2010/0005035	A1	1/2010	Carpenter et al.
2008/0234709	A1	9/2008	Houser	2010/0012703	A1	1/2010	Calabrese et al.
2008/0242939	A1	10/2008	Johnston	2010/0015104	A1	1/2010	Fraser et al.
2008/0249536	A1	10/2008	Stahler et al.	2010/0016888	A1	1/2010	Calabrese et al.
2008/0249608	A1	10/2008	Dave	2010/0017715	A1 *	1/2010	Balassanian G06F 3/0485
2008/0255413	A1	10/2008	Zemlok et al.				715/716
2008/0262654	A1	10/2008	Omori et al.	2010/0023024	A1	1/2010	Zeiner et al.
2008/0269596	A1	10/2008	Revie et al.	2010/0030233	A1	2/2010	Whitman et al.
2008/0281171	A1	11/2008	Fennell et al.	2010/0036370	A1	2/2010	Mirel et al.
2008/0287944	A1	11/2008	Pearson et al.	2010/0051668	A1	3/2010	Milliman et al.
2008/0293910	A1	11/2008	Kapiamba et al.	2010/0057118	A1	3/2010	Dietz et al.
2008/0294179	A1	11/2008	Balbierz et al.	2010/0065604	A1	3/2010	Weng
2008/0296346	A1	12/2008	Shelton, IV et al.	2010/0069942	A1	3/2010	Shelton, IV
2008/0297287	A1	12/2008	Shachar et al.	2010/0076483	A1	3/2010	Imuta
2008/0308602	A1	12/2008	Timm et al.	2010/0076489	A1	3/2010	Stopek et al.
2008/0308603	A1	12/2008	Shelton et al.	2010/0081883	A1	4/2010	Murray et al.
2008/0312686	A1	12/2008	Ellingwood	2010/0094340	A1	4/2010	Stopek et al.
2008/0312687	A1	12/2008	Blier	2010/0100123	A1	4/2010	Bennett
2008/0315829	A1	12/2008	Jones et al.	2010/0100124	A1	4/2010	Calabrese et al.
2009/0001121	A1	1/2009	Hess et al.	2010/0116519	A1	5/2010	Gareis
2009/0001130	A1	1/2009	Hess et al.	2010/0122339	A1	5/2010	Boccacci
2009/0004455	A1	1/2009	Gravagna et al.	2010/0133317	A1	6/2010	Shelton, IV et al.
2009/0005809	A1	1/2009	Hess et al.	2010/0137990	A1	6/2010	Apatsidis et al.
2009/0012534	A1	1/2009	Madhani et al.	2010/0145146	A1	6/2010	Melder
2009/0015195	A1	1/2009	Loth-Krausser	2010/0147921	A1	6/2010	Olson
2009/0020958	A1	1/2009	Soul	2010/0147922	A1	6/2010	Olson
2009/0048583	A1	2/2009	Williams et al.	2010/0179022	A1	7/2010	Shirokoshi
2009/0048589	A1	2/2009	Takashino et al.	2010/0180711	A1	7/2010	Kilibarda et al.
2009/0076506	A1	3/2009	Baker	2010/0191262	A1	7/2010	Harris et al.
2009/0078736	A1	3/2009	Van Lue	2010/0191292	A1	7/2010	DeMeo et al.
2009/0081313	A1	3/2009	Aghion et al.	2010/0193566	A1	8/2010	Scheib et al.
2009/0088659	A1	4/2009	Graham et al.	2010/0204717	A1	8/2010	Knodel
2009/0090763	A1	4/2009	Zemlok et al.	2010/0204721	A1	8/2010	Young et al.
2009/0099579	A1	4/2009	Nentwick et al.	2010/0217281	A1	8/2010	Matsuoka et al.
2009/0099876	A1	4/2009	Whitman	2010/0222901	A1	9/2010	Swayze et al.
2009/0112234	A1	4/2009	Crainich et al.	2010/0228250	A1	9/2010	Brogna
2009/0118762	A1	5/2009	Crainch et al.	2010/0241137	A1	9/2010	Doyle et al.
2009/0119011	A1	5/2009	Kondo et al.	2010/0249497	A1	9/2010	Peine et al.
2009/0131819	A1	5/2009	Ritchie et al.	2010/0249947	A1	9/2010	Lesh et al.
2009/0132400	A1	5/2009	Conway	2010/0256675	A1	10/2010	Romans
2009/0143855	A1	6/2009	Weber et al.	2010/0258327	A1	10/2010	Esenwein et al.
2009/0149871	A9	6/2009	Kagan et al.	2010/0267662	A1	10/2010	Fielder et al.
2009/0171147	A1	7/2009	Lee et al.	2010/0274160	A1	10/2010	Yachi et al.
2009/0177226	A1	7/2009	Reinprecht et al.	2010/0292540	A1	11/2010	Hess et al.
2009/0181290	A1	7/2009	Baldwin et al.	2010/0298636	A1	11/2010	Castro et al.
2009/0188964	A1	7/2009	Orlov	2010/0301097	A1	12/2010	Scirica et al.
2009/0192534	A1	7/2009	Ortiz et al.	2010/0310623	A1	12/2010	Laurencin et al.
2009/0198272	A1	8/2009	Kerver et al.	2010/0312261	A1	12/2010	Suzuki et al.
2009/0204108	A1	8/2009	Steffen	2010/0318085	A1	12/2010	Austin et al.
2009/0204109	A1	8/2009	Grove et al.	2010/0331856	A1	12/2010	Carlson et al.
2009/0206125	A1	8/2009	Huitema et al.	2011/0006101	A1	1/2011	Hall et al.
2009/0206126	A1	8/2009	Huitema et al.	2011/0011916	A1	1/2011	Levine
2009/0206131	A1	8/2009	Weisenburgh, II et al.	2011/0016960	A1	1/2011	Debrailly
2009/0206133	A1	8/2009	Morgan et al.	2011/0021871	A1	1/2011	Berkelaar
2009/0206137	A1	8/2009	Hall et al.	2011/0022032	A1	1/2011	Zemlok et al.
2009/0206139	A1	8/2009	Hall et al.	2011/0024477	A1	2/2011	Hall
2009/0206141	A1	8/2009	Huitema et al.	2011/0024478	A1	2/2011	Shelton, IV
2009/0206142	A1	8/2009	Huitema et al.	2011/0025311	A1	2/2011	Chauvin et al.
2009/0221993	A1	9/2009	Sohi et al.	2011/0036891	A1	2/2011	Zemlok et al.
2009/0227834	A1	9/2009	Nakamoto et al.	2011/0046667	A1	2/2011	Culligan et al.
2009/0234273	A1	9/2009	Intoccia et al.	2011/0052660	A1	3/2011	Yang et al.
2009/0242610	A1	10/2009	Shelton, IV et al.	2011/0060363	A1	3/2011	Hess et al.
2009/0247368	A1	10/2009	Chiang	2011/0066156	A1	3/2011	McGahan et al.
2009/0247901	A1	10/2009	Zimmer	2011/0082538	A1	4/2011	Dahlgren et al.
2009/0253959	A1	10/2009	Yoshie et al.	2011/0087276	A1	4/2011	Bedi et al.
2009/0255974	A1	10/2009	Viola	2011/0088921	A1	4/2011	Forgues et al.
2009/0262078	A1	10/2009	Pizzi	2011/0091515	A1	4/2011	Zilberman et al.
2009/0270895	A1	10/2009	Churchill et al.	2011/0095064	A1	4/2011	Taylor et al.
2009/0278406	A1	11/2009	Hoffman	2011/0101069	A1	5/2011	Bombard et al.
2009/0290016	A1	11/2009	Suda	2011/0101794	A1	5/2011	Schroeder et al.
2009/0292283	A1	11/2009	Odom	2011/0112517	A1	5/2011	Peine et al.
2009/0306639	A1	12/2009	Nevo et al.	2011/0112530	A1	5/2011	Keller
				2011/0114697	A1	5/2011	Baxter, III et al.
				2011/0121049	A1	5/2011	Malinouskas et al.
				2011/0125176	A1	5/2011	Yates et al.
				2011/0127945	A1	6/2011	Yoneda

(56)

References Cited

U.S. PATENT DOCUMENTS

2011/0129706 A1	6/2011	Takahashi et al.	2013/0023910 A1	1/2013	Solomon et al.
2011/0144764 A1	6/2011	Bagga et al.	2013/0026208 A1	1/2013	Shelton, IV et al.
2011/0147433 A1	6/2011	Shelton, IV et al.	2013/0026210 A1	1/2013	Shelton, IV et al.
2011/0160725 A1	6/2011	Kabaya et al.	2013/0030462 A1	1/2013	Keating et al.
2011/0163146 A1	7/2011	Ortiz et al.	2013/0041292 A1	2/2013	Cunningham
2011/0172495 A1	7/2011	Armstrong	2013/0057162 A1	3/2013	Pollischansky
2011/0174861 A1	7/2011	Shelton, IV et al.	2013/0068816 A1	3/2013	Mandakolathur Vasudevan et al.
2011/0192882 A1	8/2011	Hess et al.	2013/0087597 A1	4/2013	Shelton, IV et al.
2011/0199225 A1	8/2011	Touchberry et al.	2013/0090534 A1	4/2013	Burns et al.
2011/0218400 A1	9/2011	Ma et al.	2013/0096568 A1	4/2013	Justis
2011/0218550 A1	9/2011	Ma	2013/0098970 A1	4/2013	Racenet et al.
2011/0225105 A1	9/2011	Scholer et al.	2013/0105552 A1	5/2013	Weir et al.
2011/0230713 A1	9/2011	Kleemann et al.	2013/0106352 A1	5/2013	Nagamine
2011/0238044 A1	9/2011	Main et al.	2013/0116669 A1	5/2013	Shelton, IV et al.
2011/0241597 A1	10/2011	Zhu et al.	2013/0123816 A1	5/2013	Hodgkinson et al.
2011/0271186 A1	11/2011	Owens	2013/0126202 A1	5/2013	Oomori et al.
2011/0275901 A1	11/2011	Shelton, IV	2013/0131476 A1	5/2013	Siu et al.
2011/0276083 A1	11/2011	Shelton, IV et al.	2013/0131651 A1	5/2013	Strobl et al.
2011/0278343 A1	11/2011	Knodel et al.	2013/0136969 A1	5/2013	Yasui et al.
2011/0279268 A1	11/2011	Konishi et al.	2013/0153641 A1	6/2013	Shelton, IV et al.
2011/0290856 A1	12/2011	Shelton, IV et al.	2013/0158390 A1	6/2013	Tan et al.
2011/0293690 A1	12/2011	Griffin et al.	2013/0162198 A1	6/2013	Yokota et al.
2011/0295295 A1	12/2011	Shelton, IV et al.	2013/0169217 A1	7/2013	Watanabe et al.
2011/0313894 A1	12/2011	Dye et al.	2013/0172878 A1	7/2013	Smith
2011/0315413 A1	12/2011	Fisher et al.	2013/0175317 A1	7/2013	Yates et al.
2012/0004636 A1	1/2012	Lo	2013/0211244 A1	8/2013	Nathaniel
2012/0007442 A1	1/2012	Rhodes et al.	2013/0214025 A1	8/2013	Zemlok et al.
2012/0016239 A1	1/2012	Barthe et al.	2013/0233906 A1	9/2013	Hess et al.
2012/0016413 A1	1/2012	Timm et al.	2013/0238021 A1	9/2013	Gross et al.
2012/0016467 A1	1/2012	Chen et al.	2013/0248578 A1	9/2013	Gonzalez
2012/0029272 A1	2/2012	Shelton, IV et al.	2013/0253480 A1	9/2013	Kimball et al.
2012/0033360 A1	2/2012	Hsu	2013/0256373 A1	10/2013	Schmid et al.
2012/0059286 A1	3/2012	Hastings et al.	2013/0256380 A1	10/2013	Schmid et al.
2012/0064483 A1	3/2012	Lint et al.	2013/0267978 A1	10/2013	Trissel
2012/0074200 A1	3/2012	Schmid et al.	2013/0270322 A1	10/2013	Scheib et al.
2012/0078244 A1	3/2012	Worrell et al.	2013/0277410 A1	10/2013	Fernandez et al.
2012/0080336 A1	4/2012	Shelton, IV et al.	2013/0306704 A1	11/2013	Balbierz et al.
2012/0080344 A1	4/2012	Shelton, IV	2013/0317753 A1	11/2013	Kamen et al.
2012/0080478 A1	4/2012	Morgan et al.	2013/0327552 A1	12/2013	Lovelass et al.
2012/0080498 A1	4/2012	Shelton, IV et al.	2013/0333910 A1	12/2013	Tanimoto et al.
2012/0086276 A1	4/2012	Sawyers	2013/0334280 A1	12/2013	Krehel et al.
2012/0095458 A1	4/2012	Cybulski et al.	2013/0334283 A1	12/2013	Swayze et al.
2012/0109186 A1	5/2012	Parrott et al.	2013/0334285 A1	12/2013	Swayze et al.
2012/0116261 A1	5/2012	Mumaw et al.	2013/0341374 A1	12/2013	Shelton, IV et al.
2012/0116262 A1	5/2012	Houser et al.	2014/0001231 A1	1/2014	Shelton, IV et al.
2012/0116265 A1	5/2012	Houser et al.	2014/0001234 A1	1/2014	Shelton, IV et al.
2012/0116266 A1	5/2012	Houser et al.	2014/0005640 A1	1/2014	Shelton, IV et al.
2012/0118595 A1	5/2012	Pellenc	2014/0005678 A1	1/2014	Shelton, IV et al.
2012/0123463 A1	5/2012	Jacobs	2014/0005702 A1	1/2014	Timm et al.
2012/0125792 A1	5/2012	Cassivi	2014/0005718 A1	1/2014	Shelton, IV et al.
2012/0130217 A1	5/2012	Kauphusman et al.	2014/0012299 A1	1/2014	Stoddard et al.
2012/0132286 A1	5/2012	Lim et al.	2014/0014705 A1	1/2014	Baxter, III
2012/0171539 A1	7/2012	Rejman et al.	2014/0014707 A1	1/2014	Onukuri et al.
2012/0175398 A1	7/2012	Sandborn et al.	2014/0018832 A1	1/2014	Shelton, IV
2012/0197272 A1	8/2012	Oray et al.	2014/0039549 A1	2/2014	Belsky et al.
2012/0211542 A1	8/2012	Racenet	2014/0048580 A1	2/2014	Merchant et al.
2012/0234895 A1	9/2012	O'Connor et al.	2014/0081176 A1	3/2014	Hassan
2012/0234897 A1	9/2012	Shelton, IV et al.	2014/0094681 A1	4/2014	Valentine et al.
2012/0239068 A1	9/2012	Morris et al.	2014/0100558 A1	4/2014	Schmitz et al.
2012/0248169 A1	10/2012	Widenhouse et al.	2014/0107640 A1	4/2014	Yates et al.
2012/0251861 A1	10/2012	Liang et al.	2014/0115229 A1	4/2014	Kothamasu et al.
2012/0253328 A1	10/2012	Cunningham et al.	2014/0131418 A1	5/2014	Kostrzewski
2012/0283707 A1	11/2012	Giordano et al.	2014/0135832 A1	5/2014	Park et al.
2012/0289811 A1	11/2012	Viola et al.	2014/0151433 A1	6/2014	Shelton, IV et al.
2012/0289979 A1	11/2012	Eskaros et al.	2014/0158747 A1	6/2014	Measamer et al.
2012/0292367 A1	11/2012	Morgan et al.	2014/0166723 A1	6/2014	Beardsley et al.
2012/0298722 A1	11/2012	Hess et al.	2014/0166724 A1	6/2014	Schellin et al.
2012/0303002 A1	11/2012	Chowaniec et al.	2014/0166725 A1	6/2014	Schellin et al.
2013/0006227 A1	1/2013	Takashino	2014/0166726 A1	6/2014	Schellin et al.
2013/0008937 A1	1/2013	Viola	2014/0175147 A1	6/2014	Manoux et al.
2013/0012983 A1	1/2013	Kleyman	2014/0175150 A1	6/2014	Shelton, IV et al.
2013/0018400 A1	1/2013	Milton et al.	2014/0175152 A1	6/2014	Hess et al.
2013/0020375 A1	1/2013	Shelton, IV et al.	2014/0181710 A1*	6/2014	Baalu G06F 3/0484
2013/0020376 A1	1/2013	Shelton, IV et al.	2014/0188091 A1	7/2014	715/765
2013/0023861 A1	1/2013	Shelton, IV et al.	2014/0188159 A1	7/2014	Vidal et al.
			2014/0207124 A1	7/2014	Steege
			2014/0207125 A1	7/2014	Aldridge et al.
			2014/0209658 A1	7/2014	Applegate et al.
				7/2014	Skalla et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

2014/0224857	A1	8/2014	Schmid	2015/0272571	A1	10/2015	Leimbach et al.
2014/0228632	A1	8/2014	Sholev et al.	2015/0272580	A1	10/2015	Leimbach et al.
2014/0228867	A1	8/2014	Thomas et al.	2015/0272582	A1	10/2015	Leimbach et al.
2014/0239047	A1	8/2014	Hodgkinson et al.	2015/0297200	A1	10/2015	Fitzsimmons et al.
2014/0243865	A1	8/2014	Swayze et al.	2015/0297222	A1	10/2015	Huitema et al.
2014/0246475	A1	9/2014	Hall et al.	2015/0297223	A1	10/2015	Huitema et al.
2014/0248167	A1	9/2014	Sugimoto et al.	2015/0297225	A1	10/2015	Huitema et al.
2014/0249557	A1	9/2014	Koch et al.	2015/0297228	A1	10/2015	Huitema et al.
2014/0249573	A1	9/2014	Arav	2015/0297229	A1	10/2015	Schellin et al.
2014/0252061	A1	9/2014	Estrella et al.	2015/0297233	A1	10/2015	Huitema et al.
2014/0263541	A1	9/2014	Leimbach et al.	2015/0297234	A1	10/2015	Schellin et al.
2014/0263552	A1	9/2014	Hall et al.	2015/0302539	A1	10/2015	Mazar et al.
2014/0263558	A1	9/2014	Hausen et al.	2015/0303417	A1	10/2015	Koeder et al.
2014/0276730	A1	9/2014	Boudreaux et al.	2015/0313594	A1	11/2015	Shelton, IV et al.
2014/0284371	A1	9/2014	Morgan et al.	2015/0324317	A1	11/2015	Collins et al.
2014/0288460	A1	9/2014	Ouyang et al.	2015/0327864	A1	11/2015	Hodgkinson et al.
2014/0291379	A1	10/2014	Schellin et al.	2015/0336249	A1	11/2015	Iwata et al.
2014/0291383	A1	10/2014	Spivey et al.	2015/0352699	A1	12/2015	Sakai et al.
2014/0299648	A1	10/2014	Shelton, IV et al.	2015/0366585	A1	12/2015	Lemay et al.
2014/0303645	A1	10/2014	Morgan et al.	2015/0372265	A1	12/2015	Morisaku et al.
2014/0303660	A1	10/2014	Boyden et al.	2015/0374369	A1	12/2015	Yates et al.
2014/0330161	A1	11/2014	Swayze et al.	2015/0374371	A1	12/2015	Richard et al.
2014/0330298	A1	11/2014	Arshonsky et al.	2015/0374372	A1	12/2015	Zergiebel et al.
2014/0330579	A1	11/2014	Cashman et al.	2015/0374378	A1	12/2015	Giordano et al.
2014/0367445	A1	12/2014	Ingmanson et al.	2016/0000431	A1	1/2016	Giordano et al.
2014/0374130	A1	12/2014	Nakamura et al.	2016/0000437	A1	1/2016	Giordano et al.
2014/0378950	A1	12/2014	Chiu	2016/0000438	A1	1/2016	Swayze et al.
2015/0002089	A1	1/2015	Rejman et al.	2016/0000442	A1	1/2016	Shelton, IV
2015/0008248	A1	1/2015	Giordano et al.	2016/0000452	A1	1/2016	Yates et al.
2015/0025549	A1	1/2015	Kilroy et al.	2016/0000453	A1	1/2016	Yates et al.
2015/0038961	A1	2/2015	Clark et al.	2016/0023342	A1	1/2016	Koenig et al.
2015/0053737	A1	2/2015	Leimbach et al.	2016/0030042	A1	2/2016	Heinrich et al.
2015/0053742	A1	2/2015	Shelton, IV et al.	2016/0058443	A1	3/2016	Yates et al.
2015/0053743	A1	2/2015	Yates et al.	2016/0066815	A1	3/2016	Mei et al.
2015/0053746	A1	2/2015	Shelton, IV et al.	2016/0066913	A1	3/2016	Swayze et al.
2015/0053748	A1	2/2015	Yates et al.	2016/0069449	A1	3/2016	Kanai et al.
2015/0060518	A1	3/2015	Shelton, IV et al.	2016/0074040	A1	3/2016	Widenhouse et al.
2015/0060519	A1	3/2015	Shelton, IV et al.	2016/0074103	A1	3/2016	Sartor
2015/0060520	A1	3/2015	Shelton, IV et al.	2016/0082161	A1	3/2016	Zilberman et al.
2015/0060521	A1	3/2015	Weisenburgh, II et al.	2016/0089137	A1	3/2016	Hess et al.
2015/0066000	A1	3/2015	An et al.	2016/0089198	A1	3/2016	Arya et al.
2015/0076208	A1	3/2015	Shelton, IV	2016/0095585	A1	4/2016	Zergiebel et al.
2015/0076209	A1	3/2015	Shelton, IV et al.	2016/0106431	A1	4/2016	Shelton, IV et al.
2015/0076210	A1	3/2015	Shelton, IV et al.	2016/0113653	A1	4/2016	Zingman
2015/0076212	A1	3/2015	Shelton, IV	2016/0120545	A1	5/2016	Shelton, IV et al.
2015/0080868	A1	3/2015	Kerr	2016/0135835	A1	5/2016	Onuma
2015/0083781	A1	3/2015	Giordano et al.	2016/0166248	A1	6/2016	Deville et al.
2015/0083782	A1	3/2015	Scheib et al.	2016/0166256	A1	6/2016	Baxter, III et al.
2015/0088547	A1	3/2015	Balram et al.	2016/0174974	A1	6/2016	Schmid et al.
2015/0090760	A1	4/2015	Giordano et al.	2016/0183939	A1	6/2016	Shelton, IV et al.
2015/0090762	A1	4/2015	Giordano et al.	2016/0183943	A1	6/2016	Shelton, IV
2015/0122870	A1	5/2015	Zemlok et al.	2016/0183944	A1	6/2016	Swensgard et al.
2015/0134077	A1	5/2015	Shelton, IV et al.	2016/0192916	A1	7/2016	Shelton, IV et al.
2015/0150620	A1	6/2015	Miyamoto et al.	2016/0192918	A1	7/2016	Shelton, IV et al.
2015/0173749	A1	6/2015	Shelton, IV et al.	2016/0192960	A1	7/2016	Bueno et al.
2015/0173756	A1	6/2015	Baxter, III et al.	2016/0192977	A1	7/2016	Manwaring et al.
2015/0173789	A1	6/2015	Baxter, III et al.	2016/0199063	A1	7/2016	Mandakolathur Vasudevan et al.
2015/0196295	A1	7/2015	Shelton, IV et al.	2016/0199089	A1	7/2016	Hess et al.
2015/0196296	A1	7/2015	Swayze et al.	2016/0199956	A1	7/2016	Shelton, IV et al.
2015/0196299	A1	7/2015	Swayze et al.	2016/0206314	A1	7/2016	Scheib et al.
2015/0201918	A1	7/2015	Kumar et al.	2016/0235404	A1	8/2016	Shelton, IV
2015/0201932	A1	7/2015	Swayze et al.	2016/0235409	A1	8/2016	Shelton, IV et al.
2015/0201936	A1	7/2015	Swayze et al.	2016/0235494	A1	8/2016	Shelton, IV et al.
2015/0201937	A1	7/2015	Swayze et al.	2016/0242783	A1	8/2016	Shelton, IV et al.
2015/0201938	A1	7/2015	Swayze et al.	2016/0249910	A1	9/2016	Shelton, IV et al.
2015/0201939	A1	7/2015	Swayze et al.	2016/0249922	A1	9/2016	Morgan et al.
2015/0201940	A1	7/2015	Swayze et al.	2016/0256071	A1	9/2016	Shelton, IV et al.
2015/0201941	A1	7/2015	Swayze et al.	2016/0256154	A1	9/2016	Shelton, IV et al.
2015/0222212	A1	8/2015	Iwata	2016/0256159	A1	9/2016	Pinjala et al.
2015/0223868	A1	8/2015	Brandt et al.	2016/0256160	A1	9/2016	Shelton, IV et al.
2015/0231409	A1	8/2015	Racenet et al.	2016/0256229	A1	9/2016	Morgan et al.
2015/0238118	A1	8/2015	Legassey et al.	2016/0262745	A1	9/2016	Morgan et al.
2015/0256665	A1*	9/2015	Pera	2016/0262746	A1	9/2016	Shelton, IV et al.
				2016/0262921	A1	9/2016	Balbierz et al.
				2016/0270780	A1	9/2016	Hall et al.
				2016/0278765	A1	9/2016	Shelton, IV et al.
				2016/0278771	A1	9/2016	Shelton, IV et al.
				2016/0278848	A1	9/2016	Boudreaux et al.
				2016/0287265	A1	10/2016	Macdonald et al.
2015/0272557	A1	10/2015	Overmyer et al.				

(56)

References Cited

U.S. PATENT DOCUMENTS

2016/0287279	A1	10/2016	Bovay et al.	2017/0281173	A1	10/2017	Shelton, IV et al.
2016/0310143	A1	10/2016	Bettuchi	2017/0281174	A1	10/2017	Harris et al.
2016/0314716	A1	10/2016	Grubbs	2017/0281183	A1	10/2017	Miller et al.
2016/0345976	A1	12/2016	Gonzalez et al.	2017/0281184	A1	10/2017	Shelton, IV et al.
2016/0346034	A1	12/2016	Arya et al.	2017/0281186	A1	10/2017	Shelton, IV et al.
2016/0354088	A1	12/2016	Cabrera et al.	2017/0281187	A1	10/2017	Shelton, IV et al.
2016/0367122	A1	12/2016	Ichimura et al.	2017/0281189	A1	10/2017	Nalagatla et al.
2016/0374678	A1	12/2016	Becerra et al.	2017/0290584	A1	10/2017	Jasemian et al.
2017/0007236	A1	1/2017	Shelton, IV et al.	2017/0290585	A1	10/2017	Shelton, IV et al.
2017/0007243	A1	1/2017	Shelton, IV et al.	2017/0296169	A1	10/2017	Yates et al.
2017/0007244	A1	1/2017	Shelton, IV et al.	2017/0296173	A1	10/2017	Shelton, IV et al.
2017/0007245	A1	1/2017	Shelton, IV et al.	2017/0296177	A1	10/2017	Harris et al.
2017/0007248	A1	1/2017	Shelton, IV et al.	2017/0296185	A1	10/2017	Swensgard et al.
2017/0007249	A1	1/2017	Shelton, IV et al.	2017/0296213	A1	10/2017	Swensgard et al.
2017/0007250	A1	1/2017	Shelton, IV et al.	2017/0311944	A1	11/2017	Morgan et al.
2017/0007347	A1	1/2017	Jaworek et al.	2017/0311949	A1	11/2017	Shelton, IV
2017/0014125	A1	1/2017	Shelton, IV et al.	2017/0312041	A1	11/2017	Giordano et al.
2017/0027572	A1	2/2017	Nalagatla et al.	2017/0312042	A1	11/2017	Giordano et al.
2017/0049444	A1	2/2017	Schellin et al.	2017/0319201	A1	11/2017	Morgan et al.
2017/0049447	A1	2/2017	Barton et al.	2017/0319207	A1	11/2017	Shelton, IV et al.
2017/0049448	A1	2/2017	Widenhouse et al.	2017/0319209	A1	11/2017	Morgan et al.
2017/0055986	A1	3/2017	Harris et al.	2017/0325813	A1	11/2017	Aranyi et al.
2017/0056000	A1	3/2017	Nalagatla et al.	2017/0333034	A1	11/2017	Morgan et al.
2017/0056002	A1	3/2017	Nalagatla et al.	2017/0333035	A1	11/2017	Morgan et al.
2017/0056005	A1	3/2017	Shelton, IV et al.	2017/0333070	A1	11/2017	Laurent et al.
2017/0079642	A1	3/2017	Overmyer et al.	2017/0348010	A1	12/2017	Chiang
2017/0086827	A1	3/2017	Vendely et al.	2017/0348043	A1	12/2017	Wang et al.
2017/0086829	A1	3/2017	Vendely et al.	2017/0354413	A1	12/2017	Chen et al.
2017/0086830	A1	3/2017	Yates et al.	2017/0354415	A1	12/2017	Casasanta, Jr. et al.
2017/0086831	A1	3/2017	Shelton, IV et al.	2017/0358052	A1	12/2017	Yuan
2017/0086832	A1	3/2017	Harris et al.	2017/0360439	A1	12/2017	Chen et al.
2017/0086838	A1	3/2017	Harris et al.	2017/0360441	A1	12/2017	Sgroi
2017/0086842	A1	3/2017	Shelton, IV et al.	2017/0360442	A1	12/2017	Shelton, IV et al.
2017/0086844	A1	3/2017	Vendely et al.	2017/0364183	A1	12/2017	Xiao
2017/0105733	A1	4/2017	Scheib et al.	2017/0367695	A1	12/2017	Shelton, IV et al.
2017/0119388	A1	5/2017	Kostrzewski	2017/0367696	A1	12/2017	Shelton, IV et al.
2017/0119397	A1	5/2017	Harris et al.	2017/0367697	A1	12/2017	Shelton, IV et al.
2017/0150965	A1	6/2017	Williams	2017/0367698	A1	12/2017	Shelton, IV et al.
2017/0172382	A1	6/2017	Nir et al.	2017/0367699	A1	12/2017	Shelton, IV et al.
2017/0172550	A1	6/2017	Mukherjee et al.	2017/0367700	A1	12/2017	Leimbach et al.
2017/0172662	A1	6/2017	Panescu et al.	2017/0367991	A1	12/2017	Widenhouse et al.
2017/0172672	A1	6/2017	Bailey et al.	2018/0000483	A1	1/2018	Leimbach et al.
2017/0182211	A1	6/2017	Raxworthy et al.	2018/0000545	A1	1/2018	Giordano et al.
2017/0196554	A1	7/2017	Rousseau et al.	2018/0008270	A1	1/2018	Moore et al.
2017/0196556	A1	7/2017	Shah et al.	2018/0008271	A1	1/2018	Moore et al.
2017/0196558	A1	7/2017	Morgan et al.	2018/0008356	A1	1/2018	Giordano et al.
2017/0196637	A1	7/2017	Shelton, IV et al.	2018/0008357	A1	1/2018	Giordano et al.
2017/0196648	A1	7/2017	Ward et al.	2018/0028184	A1	2/2018	Shelton, IV et al.
2017/0196649	A1	7/2017	Yates et al.	2018/0028185	A1	2/2018	Shelton, IV et al.
2017/0202571	A1	7/2017	Shelton, IV et al.	2018/0042611	A1	2/2018	Swayze et al.
2017/0202596	A1	7/2017	Shelton, IV et al.	2018/0049819	A1	2/2018	Harris et al.
2017/0202770	A1	7/2017	Friedrich et al.	2018/0049824	A1	2/2018	Harris et al.
2017/0209145	A1	7/2017	Swayze et al.	2018/0049883	A1	2/2018	Moskowitz et al.
2017/0209146	A1	7/2017	Yates et al.	2018/0055513	A1	3/2018	Shelton, IV et al.
2017/0209226	A1	7/2017	Overmyer et al.	2018/0055524	A1	3/2018	Shelton, IV et al.
2017/0215881	A1	8/2017	Shelton, IV et al.	2018/0055525	A1	3/2018	Shelton, IV et al.
2017/0215943	A1	8/2017	Allen, IV	2018/0055526	A1	3/2018	Shelton, IV et al.
2017/0224331	A1	8/2017	Worthington et al.	2018/0064437	A1	3/2018	Yates et al.
2017/0224332	A1	8/2017	Hunter et al.	2018/0064440	A1	3/2018	Shelton, IV et al.
2017/0224334	A1	8/2017	Worthington et al.	2018/0064441	A1	3/2018	Shelton, IV et al.
2017/0224335	A1	8/2017	Weaner et al.	2018/0064442	A1	3/2018	Shelton, IV et al.
2017/0224339	A1	8/2017	Huang et al.	2018/0064443	A1	3/2018	Shelton, IV et al.
2017/0231627	A1	8/2017	Shelton, IV et al.	2018/0070942	A1	3/2018	Shelton, IV et al.
2017/0231628	A1	8/2017	Shelton, IV et al.	2018/0078248	A1	3/2018	Swayze et al.
2017/0238928	A1	8/2017	Morgan et al.	2018/0078268	A1	3/2018	Messery et al.
2017/0238929	A1	8/2017	Yates et al.	2018/0085116	A1	3/2018	Yates et al.
2017/0245952	A1	8/2017	Shelton, IV et al.	2018/0085117	A1	3/2018	Shelton, IV et al.
2017/0249431	A1	8/2017	Shelton, IV et al.	2018/0103953	A1	4/2018	Shelton, IV et al.
2017/0258469	A1	9/2017	Shelton, IV et al.	2018/0103955	A1	4/2018	Shelton, IV et al.
2017/0265774	A1	9/2017	Johnson et al.	2018/0110516	A1	4/2018	Baxter et al.
2017/0265856	A1	9/2017	Shelton, IV et al.	2018/0110518	A1	4/2018	Overmyer et al.
2017/0281164	A1	10/2017	Harris et al.	2018/0110519	A1	4/2018	Lytle, IV et al.
2017/0281167	A1	10/2017	Shelton, IV et al.	2018/0110520	A1	4/2018	Shelton, IV et al.
2017/0281169	A1	10/2017	Harris et al.	2018/0110521	A1	4/2018	Shelton, IV et al.
2017/0281171	A1	10/2017	Shelton, IV et al.	2018/0110522	A1	4/2018	Shelton, IV et al.
				2018/0110523	A1	4/2018	Shelton, IV
				2018/0110574	A1	4/2018	Shelton, IV et al.
				2018/0110575	A1	4/2018	Shelton, IV et al.
				2018/0114591	A1	4/2018	Pribanic et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

2018/0116658 A1	5/2018	Aronhalt, IV et al.	2018/0168638 A1	6/2018	Harris et al.
2018/0116662 A1	5/2018	Shelton, IV et al.	2018/0168639 A1	6/2018	Shelton, IV et al.
2018/0116665 A1	5/2018	Hall et al.	2018/0168640 A1	6/2018	Shelton, IV et al.
2018/0125481 A1	5/2018	Yates et al.	2018/0168641 A1	6/2018	Harris et al.
2018/0125484 A1	5/2018	Kostrzewski	2018/0168642 A1	6/2018	Shelton, IV et al.
2018/0125487 A1	5/2018	Beardsley	2018/0168643 A1	6/2018	Shelton, IV et al.
2018/0125488 A1	5/2018	Morgan et al.	2018/0168644 A1	6/2018	Shelton, IV et al.
2018/0125489 A1	5/2018	Leimbach et al.	2018/0168645 A1	6/2018	Shelton, IV et al.
2018/0125590 A1	5/2018	Giordano et al.	2018/0168646 A1	6/2018	Shelton, IV et al.
2018/0125594 A1	5/2018	Beardsley	2018/0168647 A1	6/2018	Shelton, IV et al.
2018/0126504 A1	5/2018	Shelton, IV et al.	2018/0168648 A1	6/2018	Shelton, IV et al.
2018/0132845 A1	5/2018	Schmid et al.	2018/0168649 A1	6/2018	Shelton, IV et al.
2018/0132849 A1	5/2018	Miller et al.	2018/0168650 A1	6/2018	Shelton, IV et al.
2018/0132850 A1	5/2018	Leimbach et al.	2018/0168651 A1	6/2018	Shelton, IV et al.
2018/0132851 A1	5/2018	Hall et al.	2018/0168715 A1	6/2018	Strobl
2018/0132926 A1	5/2018	Asher et al.	2018/0199940 A1	7/2018	Zergiebel et al.
2018/0132952 A1	5/2018	Spivey et al.	2018/0206843 A1	7/2018	Yates et al.
2018/0133856 A1	5/2018	Shelton, IV et al.	2018/0206906 A1	7/2018	Moua et al.
2018/0140299 A1	5/2018	Weaner et al.	2018/0214147 A1	8/2018	Merchant et al.
2018/0140368 A1	5/2018	Shelton, IV et al.	2018/0221046 A1	8/2018	Demmy et al.
2018/0146960 A1	5/2018	Shelton, IV et al.	2018/0221050 A1	8/2018	Kostrzewski et al.
2018/0150153 A1	5/2018	Yoon et al.	2018/0228490 A1	8/2018	Richard et al.
2018/0153542 A1	6/2018	Shelton, IV et al.	2018/0242962 A1	8/2018	Walen et al.
2018/0161034 A1	6/2018	Scheib et al.	2018/0249999 A1	9/2018	Parihar et al.
2018/0168575 A1	6/2018	Simms et al.	2018/0250001 A1	9/2018	Aronhalt et al.
2018/0168577 A1	6/2018	Aronhalt et al.	2018/0250020 A1	9/2018	Carusillo
2018/0168578 A1	6/2018	Aronhalt et al.	2018/0250086 A1	9/2018	Grubbs
2018/0168579 A1	6/2018	Aronhalt et al.	2018/0271520 A1	9/2018	Shelton, IV et al.
2018/0168580 A1	6/2018	Hunter et al.	2018/0273597 A1	9/2018	Stimson
2018/0168581 A1	6/2018	Hunter et al.	2018/0280020 A1	10/2018	Hess et al.
2018/0168584 A1	6/2018	Harris et al.	2018/0286274 A1	10/2018	Kamiguchi et al.
2018/0168586 A1	6/2018	Shelton, IV et al.	2018/0289369 A1	10/2018	Shelton, IV et al.
2018/0168589 A1	6/2018	Swayze et al.	2018/0296211 A1	10/2018	Timm et al.
2018/0168590 A1	6/2018	Overmyer et al.	2018/0296215 A1	10/2018	Baxter, III et al.
2018/0168591 A1	6/2018	Swayze et al.	2018/0296216 A1	10/2018	Shelton, IV et al.
2018/0168592 A1	6/2018	Overmyer et al.	2018/0296217 A1	10/2018	Moore et al.
2018/0168593 A1	6/2018	Overmyer et al.	2018/0303481 A1	10/2018	Shelton, IV et al.
2018/0168594 A1	6/2018	Shelton, IV et al.	2018/0303482 A1	10/2018	Shelton, IV et al.
2018/0168596 A1	6/2018	Beckman et al.	2018/0310931 A1	11/2018	Hall et al.
2018/0168597 A1	6/2018	Fanelli et al.	2018/0311002 A1	11/2018	Giordano et al.
2018/0168598 A1	6/2018	Shelton, IV et al.	2018/0317916 A1	11/2018	Wixey
2018/0168600 A1	6/2018	Shelton, IV et al.	2018/0317917 A1	11/2018	Huang et al.
2018/0168601 A1	6/2018	Bakos et al.	2018/0317919 A1	11/2018	Shelton, IV et al.
2018/0168602 A1	6/2018	Bakos et al.	2018/0325528 A1	11/2018	Windolf et al.
2018/0168603 A1	6/2018	Morgan et al.	2018/0325611 A1	11/2018	Robinson et al.
2018/0168604 A1	6/2018	Shelton, IV et al.	2018/0333155 A1	11/2018	Hall et al.
2018/0168605 A1	6/2018	Baber et al.	2018/0333169 A1	11/2018	Leimbach et al.
2018/0168606 A1	6/2018	Shelton, IV et al.	2018/0344319 A1	12/2018	Shelton, IV et al.
2018/0168607 A1	6/2018	Shelton, IV et al.	2018/0353170 A1	12/2018	Overmyer et al.
2018/0168608 A1	6/2018	Shelton, IV et al.	2018/0353176 A1	12/2018	Shelton, IV et al.
2018/0168609 A1	6/2018	Fanelli et al.	2018/0353177 A1	12/2018	Shelton, IV et al.
2018/0168610 A1	6/2018	Shelton, IV et al.	2018/0353178 A1	12/2018	Shelton, IV et al.
2018/0168613 A1	6/2018	Shelton, IV et al.	2018/0353179 A1	12/2018	Shelton, IV et al.
2018/0168614 A1	6/2018	Shelton, IV et al.	2018/0360443 A1	12/2018	Shelton, IV et al.
2018/0168615 A1	6/2018	Shelton, IV et al.	2018/0360445 A1	12/2018	Shelton, IV et al.
2018/0168616 A1	6/2018	Shelton, IV et al.	2018/0360446 A1	12/2018	Shelton, IV et al.
2018/0168617 A1	6/2018	Shelton, IV et al.	2018/0360447 A1	12/2018	Shelton, IV et al.
2018/0168618 A1	6/2018	Scott et al.	2018/0360448 A1*	12/2018	Harris A61B 17/07207
2018/0168619 A1	6/2018	Scott et al.	2018/0360449 A1	12/2018	Shelton, IV et al.
2018/0168621 A1	6/2018	Shelton, IV et al.	2018/0360450 A1	12/2018	Shelton, IV et al.
2018/0168623 A1	6/2018	Simms et al.	2018/0360452 A1	12/2018	Shelton, IV et al.
2018/0168624 A1	6/2018	Shelton, IV et al.	2018/0360454 A1	12/2018	Shelton, IV et al.
2018/0168625 A1	6/2018	Posada et al.	2018/0360455 A1	12/2018	Shelton, IV et al.
2018/0168626 A1	6/2018	Shelton, IV et al.	2018/0360456 A1	12/2018	Shelton, IV et al.
2018/0168627 A1	6/2018	Weaner et al.	2018/0360471 A1	12/2018	Parfett et al.
2018/0168628 A1	6/2018	Hunter et al.	2018/0360472 A1	12/2018	Harris et al.
2018/0168629 A1	6/2018	Shelton, IV et al.	2018/0360473 A1	12/2018	Shelton, IV et al.
2018/0168630 A1	6/2018	Shelton, IV et al.	2018/0360549 A1	12/2018	Hares et al.
2018/0168631 A1	6/2018	Harris et al.	2018/0368822 A1	12/2018	Shelton, IV et al.
2018/0168632 A1	6/2018	Harris et al.	2018/0368833 A1	12/2018	Shelton, IV et al.
2018/0168633 A1	6/2018	Shelton, IV et al.	2018/0368837 A1	12/2018	Morgan et al.
2018/0168634 A1	6/2018	Harris et al.	2018/0368838 A1	12/2018	Shelton, IV et al.
2018/0168635 A1	6/2018	Shelton, IV et al.	2018/0368839 A1	12/2018	Shelton, IV et al.
2018/0168636 A1	6/2018	Shelton, IV et al.	2018/0368840 A1	12/2018	Shelton, IV et al.
2018/0168637 A1	6/2018	Harris et al.	2018/0368841 A1	12/2018	Shelton, IV et al.
			2018/0368842 A1	12/2018	Shelton, IV et al.
			2018/0368843 A1	12/2018	Shelton, IV et al.
			2018/0368844 A1	12/2018	Bakos et al.
			2018/0368845 A1	12/2018	Bakos et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

2018/0368846	A1	12/2018	Shelton, IV et al.	2019/0105035	A1	4/2019	Shelton, IV et al.
2018/0368847	A1	12/2018	Shelton, IV et al.	2019/0105036	A1	4/2019	Morgan et al.
2019/0000446	A1	1/2019	Shelton, IV et al.	2019/0105037	A1	4/2019	Morgan et al.
2019/0000448	A1	1/2019	Shelton, IV et al.	2019/0105038	A1	4/2019	Schmid et al.
2019/0000450	A1	1/2019	Shelton, IV et al.	2019/0105039	A1	4/2019	Morgan et al.
2019/0000454	A1	1/2019	Swayze et al.	2019/0105043	A1	4/2019	Jaworek et al.
2019/0000456	A1	1/2019	Shelton, IV et al.	2019/0105044	A1	4/2019	Shelton, IV et al.
2019/0000457	A1	1/2019	Shelton, IV et al.	2019/0105049	A1	4/2019	Moore et al.
2019/0000458	A1	1/2019	Shelton, IV et al.	2019/0110791	A1	4/2019	Shelton, IV et al.
2019/0000459	A1	1/2019	Shelton, IV et al.	2019/0110792	A1	4/2019	Shelton, IV et al.
2019/0000460	A1	1/2019	Shelton, IV et al.	2019/0110793	A1	4/2019	Parihar et al.
2019/0000461	A1	1/2019	Shelton, IV et al.	2019/0117216	A1	4/2019	Overmyer et al.
2019/0000462	A1	1/2019	Shelton, IV et al.	2019/0117217	A1	4/2019	Overmyer et al.
2019/0000463	A1	1/2019	Shelton, IV et al.	2019/0117222	A1	4/2019	Shelton, IV et al.
2019/0000464	A1	1/2019	Shelton, IV et al.	2019/0117224	A1	4/2019	Setser et al.
2019/0000465	A1	1/2019	Shelton, IV et al.	2019/0117225	A1	4/2019	Moore et al.
2019/0000466	A1	1/2019	Shelton, IV et al.	2019/0125343	A1	5/2019	Wise et al.
2019/0000467	A1	1/2019	Shelton, IV et al.	2019/0125344	A1	5/2019	DiNardo et al.
2019/0000468	A1	1/2019	Adams et al.	2019/0125345	A1	5/2019	Baber et al.
2019/0000469	A1	1/2019	Shelton, IV et al.	2019/0125365	A1	5/2019	Parfett et al.
2019/0000470	A1	1/2019	Yates et al.	2019/0125380	A1	5/2019	Hunter et al.
2019/0000471	A1	1/2019	Shelton, IV et al.	2019/0125475	A1	5/2019	Wise et al.
2019/0000472	A1	1/2019	Shelton, IV et al.	2019/0133585	A1	5/2019	Smith et al.
2019/0000473	A1	1/2019	Shelton, IV et al.	2019/0142421	A1	5/2019	Shelton, IV
2019/0000474	A1	1/2019	Shelton, IV et al.	2019/0183490	A1	6/2019	Shelton, IV et al.
2019/0000475	A1	1/2019	Shelton, IV et al.	2019/0183491	A1	6/2019	Shelton, IV et al.
2019/0000476	A1	1/2019	Shelton, IV et al.	2019/0183492	A1	6/2019	Shelton, IV et al.
2019/0000477	A1	1/2019	Shelton, IV et al.	2019/0183493	A1	6/2019	Shelton, IV et al.
2019/0000478	A1	1/2019	Messerly et al.	2019/0183494	A1	6/2019	Shelton, IV et al.
2019/0000479	A1	1/2019	Harris et al.	2019/0183495	A1	6/2019	Shelton, IV et al.
2019/0000525	A1	1/2019	Messerly et al.	2019/0183496	A1	6/2019	Shelton, IV et al.
2019/0000528	A1	1/2019	Yates et al.	2019/0183497	A1	6/2019	Shelton, IV et al.
2019/0000530	A1	1/2019	Yates et al.	2019/0183498	A1	6/2019	Shelton, IV et al.
2019/0000531	A1	1/2019	Messerly et al.	2019/0183499	A1	6/2019	Shelton, IV et al.
2019/0000534	A1	1/2019	Messerly et al.	2019/0183500	A1	6/2019	Shelton, IV et al.
2019/0000538	A1	1/2019	Widenhouse et al.	2019/0183501	A1	6/2019	Shelton, IV et al.
2019/0000555	A1	1/2019	Schings et al.	2019/0183502	A1	6/2019	Shelton, IV et al.
2019/0000565	A1	1/2019	Shelton, IV et al.	2019/0183503	A1	6/2019	Shelton, IV et al.
2019/0003292	A1	1/2019	Balan et al.	2019/0183504	A1	6/2019	Shelton, IV et al.
2019/0008509	A1	1/2019	Shelton, IV et al.	2019/0183505	A1	6/2019	Vendely et al.
2019/0008511	A1	1/2019	Kerr et al.	2019/0183592	A1	6/2019	Shelton, IV et al.
2019/0015096	A1	1/2019	Shelton, IV et al.	2019/0183594	A1	6/2019	Shelton, IV et al.
2019/0015102	A1	1/2019	Baber et al.	2019/0183597	A1	6/2019	Shelton, IV et al.
2019/0015165	A1	1/2019	Giordano et al.	2019/0192137	A1	6/2019	Shelton, IV et al.
2019/0029675	A1	1/2019	Yates et al.	2019/0192138	A1	6/2019	Shelton, IV et al.
2019/0029676	A1	1/2019	Yates et al.	2019/0192141	A1	6/2019	Shelton, IV et al.
2019/0029677	A1	1/2019	Yates et al.	2019/0192144	A1	6/2019	Parfett et al.
2019/0029678	A1	1/2019	Shelton, IV et al.	2019/0192145	A1	6/2019	Shelton, IV et al.
2019/0029681	A1	1/2019	Swayze et al.	2019/0192146	A1	6/2019	Widenhouse et al.
2019/0029682	A1	1/2019	Huitema et al.	2019/0192147	A1	6/2019	Shelton, IV et al.
2019/0029701	A1	1/2019	Shelton, IV et al.	2019/0192148	A1	6/2019	Shelton, IV et al.
2019/0033955	A1	1/2019	Leimbach et al.	2019/0192149	A1	6/2019	Shelton, IV et al.
2019/0038279	A1	2/2019	Shelton, IV et al.	2019/0192150	A1	6/2019	Widenhouse et al.
2019/0038281	A1	2/2019	Shelton, IV et al.	2019/0192151	A1	6/2019	Shelton, IV et al.
2019/0038282	A1	2/2019	Shelton, IV et al.	2019/0192152	A1	6/2019	Morgan et al.
2019/0038283	A1	2/2019	Shelton, IV et al.	2019/0192153	A1	6/2019	Shelton, IV et al.
2019/0038292	A1	2/2019	Zhang	2019/0192154	A1	6/2019	Shelton, IV et al.
2019/0038371	A1	2/2019	Wixey et al.	2019/0192155	A1	6/2019	Shelton, IV et al.
2019/0046181	A1	2/2019	McCuen	2019/0192156	A1	6/2019	Simms et al.
2019/0046187	A1	2/2019	Yates et al.	2019/0192157	A1	6/2019	Scott et al.
2019/0059886	A1	2/2019	Shelton, IV et al.	2019/0192158	A1	6/2019	Scott et al.
2019/0090870	A1	3/2019	Shelton, IV et al.	2019/0192159	A1	6/2019	Simms et al.
2019/0090871	A1	3/2019	Shelton, IV et al.	2019/0192227	A1	6/2019	Shelton, IV et al.
2019/0091183	A1	3/2019	Tomat et al.	2019/0192235	A1	6/2019	Harris et al.
2019/0099177	A1	4/2019	Yates et al.	2019/0192236	A1	6/2019	Shelton, IV et al.
2019/0099178	A1	4/2019	Leimbach et al.	2019/0200895	A1	7/2019	Shelton, IV et al.
2019/0099179	A1	4/2019	Leimbach et al.	2019/0200991	A1	7/2019	Moore et al.
2019/0099180	A1	4/2019	Leimbach et al.	2019/0200992	A1	7/2019	Moore et al.
2019/0099181	A1	4/2019	Shelton, IV et al.	2019/0200993	A1	7/2019	Moore et al.
2019/0099182	A1	4/2019	Bakos et al.	2019/0200994	A1	7/2019	Moore et al.
2019/0099183	A1	4/2019	Leimbach et al.	2019/0201028	A1	7/2019	Shelton, IV et al.
2019/0099184	A1	4/2019	Setser et al.	2019/0209164	A1	7/2019	Timm et al.
2019/0099224	A1	4/2019	Leimbach et al.	2019/0209165	A1	7/2019	Timm et al.
2019/0099229	A1	4/2019	Spivey et al.	2019/0209171	A1	7/2019	Shelton, IV et al.
2019/0102930	A1	4/2019	Leimbach et al.	2019/0209172	A1	7/2019	Shelton, IV et al.
				2019/0209247	A1	7/2019	Giordano et al.
				2019/0209248	A1	7/2019	Giordano et al.
				2019/0209249	A1	7/2019	Giordano et al.
				2019/0209250	A1	7/2019	Giordano et al.

US D890,784 S

Page 43

(56)	References Cited			CN	103829983	A	6/2014
	U.S. PATENT DOCUMENTS			CN	103908313	A	7/2014
				CN	203693685	U	7/2014
				CN	203736251	U	7/2014
2019/0216558	A1	7/2019	Giordano et al.	CN	103981635	A	8/2014
2019/0223865	A1	7/2019	Shelton, IV et al.	CN	203815517	U	9/2014
2019/0223871	A1	7/2019	Moore et al.	CN	102783741	B	10/2014
2019/0261991	A1	8/2019	Beckman et al.	CN	102973300	B	10/2014
2019/0267403	A1	8/2019	Li et al.	CN	104337556	A	2/2015
2019/0269400	A1	9/2019	Mandakolathur Vasudevan et al.	CN	204158440	U	2/2015
2019/0269402	A1	9/2019	Murray et al.	CN	204158441	U	2/2015
2019/0269403	A1	9/2019	Baxter, III et al.	CN	102469995	B	3/2015
2019/0269407	A1	9/2019	Swensgard et al.	CN	204636451	U	9/2015
2019/0269428	A1	9/2019	Allen et al.	CN	103860225	B	3/2016
2019/0290263	A1	9/2019	Morgan et al.	CN	103750872	B	5/2016
2019/0290264	A1	9/2019	Morgan et al.	DE	273689	C	5/1914
2019/0290265	A1	9/2019	Shelton, IV et al.	DE	1775926	A	1/1972
2019/0290274	A1	9/2019	Shelton, IV	DE	3036217	A1	4/1982
2019/0321040	A1	10/2019	Shelton, IV	DE	3210466	A1	9/1983
2019/0321041	A1	10/2019	Shelton, IV	DE	3709067	A1	9/1988
2019/0350582	A1	11/2019	Shelton, IV et al.	DE	19534043	A1	3/1997
2019/0365384	A1	12/2019	Baxter, III et al.	DE	19851291	A1	1/2000
2020/0000461	A1	1/2020	Yates et al.	DE	19924311	A1	11/2000
2020/0000531	A1	1/2020	Giordano et al.	DE	20016423	U1	2/2001
				DE	20112837	U1	10/2001
				DE	20121753	U1	4/2003
				DE	202004012389	U1	9/2004
				DE	10314072	A1	10/2004
AU	2012200178	B2	7/2013	DE	102004014011	A1	10/2005
BR	11201302777	A2	1/2017	DE	102004063606	A1	7/2006
CA	1015829	A	8/1977	DE	202007003114	U1	6/2007
CA	1125615	A	6/1982	DE	102010013150	A1	9/2011
CA	2520413	A1	3/2007	EP	0000756	A1	2/1979
CA	2725181	A1	11/2007	EP	0122046	A1	10/1984
CA	2851239	A1	11/2007	EP	0129442	B1	11/1987
CA	2664874	A1	11/2009	EP	0255631	A1	2/1988
CA	2813230	A1	4/2012	EP	0169044	B1	6/1991
CA	2940510	A1	8/2015	EP	0541950	A1	5/1993
CA	2698728	C	8/2016	EP	0548998	A1	6/1993
CN	1163558	A	10/1997	EP	0594148	A1	4/1994
CN	2488482	Y	5/2002	EP	0646357	A1	4/1995
CN	1634601	A	7/2005	EP	0505036	B1	5/1995
CN	2716900	Y	8/2005	EP	0669104	A1	8/1995
CN	2738962	Y	11/2005	EP	0705571	A1	4/1996
CN	1777406	A	5/2006	EP	0528478	B1	5/1996
CN	2796654	Y	7/2006	EP	0770355	A1	5/1997
CN	2868212	Y	2/2007	EP	0625335	B1	11/1997
CN	200942099	Y	9/2007	EP	0879742	A1	11/1998
CN	200984209	Y	12/2007	EP	0650701	B1	3/1999
CN	200991269	Y	12/2007	EP	0923907	A1	6/1999
CN	201001747	Y	1/2008	EP	0484677	B2	7/2000
CN	101143105	A	3/2008	EP	1034747	A1	9/2000
CN	201029899	Y	3/2008	EP	1034748	A1	9/2000
CN	101378791	A	3/2009	EP	0726632	B1	10/2000
CN	101522120	A	9/2009	EP	1053719	A1	11/2000
CN	101669833	A	3/2010	EP	1055399	A1	11/2000
CN	101721236	A	6/2010	EP	1055400	A1	11/2000
CN	101828940	A	9/2010	EP	1080694	A1	3/2001
CN	101873834	A	10/2010	EP	1090592	A1	4/2001
CN	201719298	U	1/2011	EP	1095627	A1	5/2001
CN	102038532	A	5/2011	EP	0806914	B1	9/2001
CN	201879759	U	6/2011	EP	1234587	A1	8/2002
CN	201949071	U	8/2011	EP	1284120	A1	2/2003
CN	102217961	A	10/2011	EP	0717967	B1	5/2003
CN	102217963	A	10/2011	EP	0869742	B1	5/2003
CN	101779977	B	12/2011	EP	1374788	A1	1/2004
CN	101912284	B	7/2012	EP	1407719	A2	4/2004
CN	102125450	B	7/2012	EP	0996378	B1	6/2004
CN	202313537	U	7/2012	EP	1157666	B1	9/2005
CN	202397539	U	8/2012	EP	0880338	B1	10/2005
CN	202426586	U	9/2012	EP	1158917	B1	11/2005
CN	202489990	U	10/2012	EP	1344498	B1	11/2005
CN	102228387	B	11/2012	EP	1330989	B1	12/2005
CN	102835977	A	12/2012	EP	1632191	A2	3/2006
CN	202568350	U	12/2012	EP	1082944	B1	5/2006
CN	103690212	A	4/2014	EP	1253866	B1	7/2006
CN	203564285	U	4/2014	EP	1723914	A1	11/2006
CN	203564287	U	4/2014	EP	1285633	B1	12/2006
CN	203597997	U	5/2014	EP	1011494	B1	1/2007
CN	103829981	A	6/2014	EP			

US D890,784 S

Page 44

(56)

References Cited

FOREIGN PATENT DOCUMENTS

EP	1767163	A1	3/2007	JP	H07255735	A	10/1995
EP	1837041	A1	9/2007	JP	H07285089	A	10/1995
EP	0922435	B1	10/2007	JP	H0833642	A	2/1996
EP	1599146	B1	10/2007	JP	H08164141	A	6/1996
EP	1330201	B1	6/2008	JP	H08182684	A	7/1996
EP	2039302	A2	3/2009	JP	H08507708	A	8/1996
EP	1719461	B1	6/2009	JP	H08229050	A	9/1996
EP	2116196	A2	11/2009	JP	H08289895	A	11/1996
EP	1769754	B1	6/2010	JP	H09-323068	A	12/1997
EP	1627605	B1	12/2010	JP	H10118090	A	5/1998
EP	2316345	A1	5/2011	JP	H10-200699	A	7/1998
EP	1962711	B1	2/2012	JP	H10296660	A	11/1998
EP	2486862	A2	8/2012	JP	2000014632	A	1/2000
EP	2486868	A2	8/2012	JP	2000033071	A	2/2000
EP	2517638	A1	10/2012	JP	2000112002	A	4/2000
EP	2606812	A1	6/2013	JP	2000166932	A	6/2000
EP	2649948	A1	10/2013	JP	2000171730	A	6/2000
EP	2649949	A1	10/2013	JP	2000271141	A1	10/2000
EP	2668910	A2	12/2013	JP	2000287987	A	10/2000
EP	2687164	A2	1/2014	JP	2000325303	A	11/2000
EP	2713902	A1	4/2014	JP	2001087272	A	4/2001
EP	2743042	A2	6/2014	JP	2001514541	A	9/2001
EP	2764827	A2	8/2014	JP	2001276091	A	10/2001
EP	2777524	A2	9/2014	JP	2002051974	A	2/2002
EP	2842500	A1	3/2015	JP	2002054903	A	2/2002
EP	2853220	A1	4/2015	JP	2002085415	A	3/2002
EP	2298220	B1	6/2016	JP	2002143078	A	5/2002
EP	2510891	B1	6/2016	JP	2002153481	A	5/2002
EP	3031404	A1	6/2016	JP	2002528161	A	9/2002
EP	3047806	A1	7/2016	JP	2002314298	A	10/2002
EP	3078334	A1	10/2016	JP	2003135473	A	5/2003
EP	2364651	B1	11/2016	JP	2003521301	A	7/2003
EP	2747235	B1	11/2016	JP	3442423	B2	9/2003
EP	2789299	B1	5/2017	JP	2003300416	A	10/2003
EP	3225190	A2	10/2017	JP	2004147701	A	5/2004
EP	3363378	A1	8/2018	JP	2004162035	A	6/2004
FR	459743	A	11/1913	JP	2004229976	A	8/2004
FR	999646	A	2/1952	JP	2005013573	A	1/2005
FR	1112936	A	3/1956	JP	2005080702	A	3/2005
FR	2598905	A1	11/1987	JP	2005131163	A	5/2005
FR	2689749	B1	7/1994	JP	2005131164	A	5/2005
FR	2765794	A1	1/1999	JP	2005131173	A	5/2005
FR	2815842	A1	5/2002	JP	2005131211	A	5/2005
GB	939929	A	10/1963	JP	2005131212	A	5/2005
GB	1210522	A	10/1970	JP	2005137423	A	6/2005
GB	1217159	A	12/1970	JP	2005187954	A	7/2005
GB	1339394	A	12/1973	JP	2005211455	A	8/2005
GB	2024012	A	1/1980	JP	2005328882	A	12/2005
GB	2109241	A	6/1983	JP	2005335432	A	12/2005
GB	2090534	B	6/1984	JP	2005342267	A	12/2005
GB	2272159	A	5/1994	JP	3791856	B2	6/2006
GB	2336214	A	10/1999	JP	2006187649	A	7/2006
GB	2509523	A	7/2014	JP	2006218228	A	8/2006
GR	930100110	A	11/1993	JP	2006281405	A	10/2006
JP	S54711908	Y1	5/1972	JP	2006346445	A	12/2006
JP	S5033988	U	4/1975	JP	2008220032	A	9/2008
JP	S5367286	A	6/1978	JP	2009507526	A	2/2009
JP	S56112235	A	9/1981	JP	2009189838	A	8/2009
JP	S60113007	A	6/1985	JP	2009189846	A	8/2009
JP	562170011	U	10/1987	JP	2009207260	A	9/2009
JP	563270040	A	11/1988	JP	2009226028	A	10/2009
JP	H0129503	B2	6/1989	JP	2009538684	A	11/2009
JP	H0378514	U	8/1991	JP	2009539420	A	11/2009
JP	H0385009	U	8/1991	JP	2010069307	A	4/2010
JP	H04215747	A	8/1992	JP	2010069310	A	4/2010
JP	H04131860	U	12/1992	JP	2010098844	A	4/2010
JP	H0584252	A	4/1993	JP	2010214128	A	9/2010
JP	H05123325	A	5/1993	JP	2011072574	A	4/2011
JP	H05226945	A	9/1993	JP	4722849	B2	7/2011
JP	H0630945	A	2/1994	JP	4728996	B2	7/2011
JP	H06237937	A	8/1994	JP	2011524199	A	9/2011
JP	H06327684	A	11/1994	JP	2012143283	A	8/2012
JP	H079622	U	2/1995	JP	5154710	B1	2/2013
JP	H07124166	A	5/1995	JP	2014121599	A	7/2014
JP	H07163573	A	6/1995	JP	2016512057	A	4/2016
				KR	20100110134	A	10/2010
				KR	20110003229	A	1/2011
				RU	1814161	C	5/1993
				RU	2008830	C1	3/1994

(56)

References Cited

FOREIGN PATENT DOCUMENTS

RU	2052979	C1	1/1996	WO	WO-2006051252	A1	5/2006
RU	2066128	C1	9/1996	WO	WO-2006059067	A1	6/2006
RU	2069981	C1	12/1996	WO	WO-2006073581	A2	7/2006
RU	2098025	C1	12/1997	WO	WO-2006085389	A1	8/2006
RU	2104671	C1	2/1998	WO	WO-2007015971	A2	2/2007
RU	2110965	C1	5/1998	WO	WO-2007074430	A1	7/2007
RU	2141279	C1	11/1999	WO	WO-2007129121	A1	11/2007
RU	2144791	C1	1/2000	WO	WO-2007137304	A2	11/2007
RU	2161450	C1	1/2001	WO	WO-2007142625	A2	12/2007
RU	2181566	C2	4/2002	WO	WO-2008021969	A2	2/2008
RU	2187249	C2	8/2002	WO	WO-2008061566	A1	5/2008
RU	32984	U1	10/2003	WO	WO-2008089404	A2	7/2008
RU	2225170	C2	3/2004	WO	WO-2009005969	A2	1/2009
RU	42750	U1	12/2004	WO	WO-2009067649	A2	5/2009
RU	61114	U1	2/2007	WO	WO-2009091497	A2	7/2009
RU	61122	U1	2/2007	WO	WO-2010126129	A1	11/2010
RU	2430692	C2	10/2011	WO	WO-2010134913	A1	11/2010
SU	189517	A	1/1967	WO	WO-2011008672	A2	1/2011
SU	297156	A	5/1971	WO	WO-2011044343	A2	4/2011
SU	328636	A	9/1972	WO	WO-2012006306	A2	1/2012
SU	511939	A1	4/1976	WO	WO-2012013577	A1	2/2012
SU	674747	A1	7/1979	WO	WO-2012044606	A2	4/2012
SU	728848	A1	4/1980	WO	WO-2012061725	A1	5/2012
SU	1009439	A	4/1983	WO	WO-2012072133	A1	6/2012
SU	1271497	A1	11/1986	WO	WO-2012166503	A1	12/2012
SU	1333319	A2	8/1987	WO	WO-2013087092	A1	6/2013
SU	1377052	A1	2/1988	WO	WO-2013151888	A1	10/2013
SU	1377053	A1	2/1988	WO	WO-2014004209	A2	1/2014
SU	1443874	A1	12/1988	WO	WO-2014113438	A1	7/2014
SU	1509051	A1	9/1989	WO	WO-2015032797	A1	3/2015
SU	1561964	A1	5/1990	WO	WO-2015138760	A1	9/2015
SU	1708312	A1	1/1992	WO	WO-2015187107	A1	12/2015
SU	1722476	A1	3/1992				
SU	1752361	A1	8/1992				
SU	1814161	A1	5/1993				
WO	WO-9315648	A1	8/1993				
WO	WO-9420030	A1	9/1994				
WO	WO-9517855	A1	7/1995				
WO	WO-9520360	A1	8/1995				
WO	WO-9623448	A1	8/1996				
WO	WO-9635464	A1	11/1996				
WO	WO-9639086	A1	12/1996				
WO	WO-9639088	A1	12/1996				
WO	WO-9724073	A1	7/1997				
WO	WO-9734533	A1	9/1997				
WO	WO-9827870	A1	7/1998				
WO	WO-9903407	A1	1/1999				
WO	WO-9903409	A1	1/1999				
WO	WO-9948430	A1	9/1999				
WO	WO-0024322	A1	5/2000				
WO	WO-0024330	A1	5/2000				
WO	WO-0053112	A2	9/2000				
WO	WO-0057796	A1	10/2000				
WO	WO-0105702	A1	1/2001				
WO	WO-0154594	A1	8/2001				
WO	WO-0158371	A1	8/2001				
WO	WO-0162164	A2	8/2001				
WO	WO-0162169	A2	8/2001				
WO	WO-0191646	A1	12/2001				
WO	WO-0219932	A1	3/2002				
WO	WO-0226143	A1	4/2002				
WO	WO-0236028	A1	5/2002				
WO	WO-02065933	A2	8/2002				
WO	WO-03055402	A1	7/2003				
WO	WO-03094747	A1	11/2003				
WO	WO-03079909	A3	3/2004				
WO	WO-2004019803	A1	3/2004				
WO	WO-2004032783	A1	4/2004				
WO	WO-2004047626	A1	6/2004				
WO	WO-2004047653	A2	6/2004				
WO	WO-2004056277	A1	7/2004				
WO	WO-2004078050	A2	9/2004				
WO	WO-2004078051	A2	9/2004				
WO	WO-2004096015	A2	11/2004				
WO	WO-2006044581	A2	4/2006				

OTHER PUBLICATIONS

Arrow Sign Icon Next Button, by Blan-k, shutterstock.com [online], published on or before Aug. 6, 2014, [retrieved on Jun. 4, 2019], retrieved from the Internet [URL: <https://www.shutterstock.com/de/image-vector/arrow-sign-icon-next-button-navigation-207700303?irgwc=1&utm...> see PDF in file for full URL] (Year: 2014).*

Elite Icons, by smart/icons, iconfinder.com [online], published on Aug. 18, 2016, [retrieved on Jun. 4, 2019], retrieved from the Internet [URL: <https://www.iconfinder.com/iconsets/elite>] (Year: 2016).*

Schellhammer et al., "Poly-Lactic-Acid for Coating of Endovascular Stents: Preliminary Results in Canine Experimental Av-Fistulae," Mat.-wiss. u. Werkstofftech., 32, pp. 193-199 (2001).

Miyata et al., "Biomolecule-Sensitive Hydrogels," Advanced Drug Delivery Reviews, 54 (2002) pp. 79-98.

Jeong et al., "Thermosensitive Sol-Gel Reversible Hydrogels," Advanced Drug Delivery Reviews, 54 (2002) pp. 37-51.

Covidien Brochure, "Endo GIA™ Ultra Universal Stapler," (2010), 2 pages.

Qiu et al., "Environment-Sensitive Hydrogels for Drug Delivery," Advanced Drug Delivery Reviews, 53 (2001) pp. 321-339.

Hoffman, "Hydrogels for Biomedical Applications," Advanced Drug Delivery Reviews, 43 (2002) pp. 3-12.

Peppas, "Physiologically Responsive Hydrogels," Journal of Bioactive and Compatible Polymers, vol. 6 (Jul. 1991) pp. 241-246.

Peppas, Editor "Hydrogels in Medicine and Pharmacy," vol. I, Fundamentals, CRC Press, 1986.

Young, "Microcellular foams via phase separation," Journal of Vacuum Science & Technology A 4(3), (May/Jun. 1986).

Ebara, "Carbohydrate-Derived Hydrogels and Microgels," Engineered Carbohydrate-Based Materials for Biomedical Applications: Polymers, Surfaces, Dendrimers, Nanoparticles, and Hydrogels, Edited by Ravin Narain, 2011, pp. 337-345.

D. Tuite, Ed., "Get the Lowdown on Ultracapacitors," Nov. 15, 2007; [online] URL: <http://electronicdesign.com/Articles/Print.cfm?ArticleID=17465>, accessed Jan. 15, 2008 (5 pages).

Datasheet for Panasonic TK Relays Ultra Low Profile 2 A Polarized Relay, Copyright Matsushita Electric Works, Ltd. (Known of at least as early as Aug. 17, 2010), 5 pages.

B.R. Coolman, DVM, MS et al., "Comparison of Skin Staples With Sutures for Anastomosis of the Small Intestine in Dogs," Abstract;

(56)

References Cited

OTHER PUBLICATIONS

- <http://www.blackwell-synergy.com/doi/abs/10.1053/jvet.2000.7539?cookieSet=1&journalCode=vsu> which redirects to <http://www3.interscience.wiley.com/journal/119040681/abstract?Cretry=1&Sretry=0>; [online] accessed: Sep. 22, 2008 (2 pages). Disclosed Anonymously, "Motor-Driven Surgical Stapler Improvements," Research Disclosure Database No. 526041, Published: Feb. 2008.
- Van Meer et al., "A Disposable Plastic Compact Wrist for Smart Minimally Invasive Surgical Tools," LAAS/CNRS (Aug. 2005).
- Breedveld et al., "A New, Easily Miniaturized Sterrable Endoscope," IEEE Engineering in Medicine and Biology Magazine (Nov./Dec. 2005).
- ASTM procedure D2240-00, "Standard Test Method for Rubber Property-Durometer Hardness," (Published Aug. 2000).
- ASTM procedure D2240-05, "Standard Test Method for Rubber Property-Durometer Hardness," (Published Apr. 2010).
- Solorio et al., "Gelatin Microspheres Crosslinked with Genipin for Local Delivery of Growth Factors," J. Tissue Eng. Regen. Med. (2010), 4(7): pp. 514-523.
- Pitt et al., "Attachment of Hyaluronan to Metallic Surfaces," J. Biomed. Mater. Res. 68A: pp. 95-106, 2004.
- Covidien iDrive™ Ultra in Service Reference Card, "iDrive™ Ultra Powered Stapling Device," (4 pages).
- Covidien iDrive™ Ultra Powered Stapling System brochure, "The Power of iDrive™ Ultra Powered Stapling System and Tri-Staple™ Technology," (23 pages).
- Covidien "iDrive™ Ultra Powered Stapling System, A Guide for Surgeons," (6 pages).
- Covidien "iDrive™ Ultra Powered Stapling System, Cleaning and Sterilization Guide," (2 pages).
- Indian Standard: Automotive Vehicles—Brakes and Braking Systems (IS 11852-1:2001), Mar. 1, 2001.
- Covidien Brochure "iDrive™ Ultra Powered Stapling System," (6 pages).
- Allegro MicroSystems, LLC, Automotive Full Bridge MOSFET Driver, A3941-DS, Rev. 5, 21 pages, <http://www.allegromicro.com/~media/Files/Datasheets/A3941-Datasheet.ashx?la=en>.
- Data Sheet of LM4F230H5QR, 2007.
- Covidien Brochure, "Endo GIA™ Reloads with Tri-Staple™ Technology," (2010), 1 page.
- Covidien Brochure, "Endo GIA™ Reloads with Tri-Staple™ Technology and Endo GIA™ Ultra Universal Staplers," (2010), 2 pages.
- Covidien Brochure, "Endo GIA™ Curved Tip Reload with Tri-Staple™ Technology," (2012), 2 pages.
- Covidien Brochure, "Endo GIA™ Reloads with Tri-Staple™ Technology," (2010), 2 pages.
- <http://ninpgan.net/publications/51-100/89.pdf>; 2004, Ning Pan, On Uniqueness of Fibrous Materials, Design & Nature II. Eds: Colins, M. and Brebbia, C. WIT Press, Boston, 493-504.
- Seils et al., Covidien Summary: Clinical Study "UConn Biodynamics: Final Report on Results," (2 pages).
- Byrne et al., "Molecular Imprinting Within Hydrogels," Advanced Drug Delivery Reviews, 54 (2002) pp. 149-161.
- Fast, Versatile Blackfin Processors Handle Advanced RFID Reader Applications; Analog Dialogue: vol. 40—Sep. 2006; <http://www.analog.com/library/analogDialogue/archives/40-09/rfid.pdf>; Wayback Machine to Feb. 15, 2012.
- Chen et al., "Elastomeric Biomaterials for Tissue Engineering," Progress in Polymer Science 38 (2013), pp. 584-671.
- Matsuda, "Thermodynamics of Formation of Porous Polymeric Membrane from Solutions," Polymer Journal, vol. 23, No. 5, pp. 435-444 (1991).
- Covidien Brochure, "Endo GIA™ Black Reload with Tri-Staple™ Technology," (2012), 2 pages.
- Biomedical Coatings, Fort Wayne Metals, Research Products Corporation, obtained online at www.fwmetals.com on Jun. 21, 2010 (1 page).
- The Sodem Aseptic Battery Transfer Kit, Sodem Systems, 2000, 3 pages.
- C.C. Thompson et al., "Peroral Endoscopic Reduction of Dilated Gastrojejunal Anastomosis After Roux-en-Y Gastric Bypass: A Possible New Option for Patients with Weight Regain," Surg Endosc (2006) vol. 20., pp. 1744-1748.
- Serial Communication Protocol; Michael Lemmon Feb. 1, 2009; <http://www3.nd.edu/~lemmon/courses/ee224/web-manual/web-manual/lab12/node2.html>; Wayback Machine to Apr. 29, 2012.
- Lyon et al., "The Relationship Between Current Load and Temperature for Quasi-Steady State and Transient Conditions," SPIE—International Society for Optical Engineering. Proceedings, vol. 4020, (pp. 62-70), Mar. 30, 2000.
- Anonymous: "Sense & Control Application Note Current Sensing Using Linear Hall Sensors," Feb. 3, 2009, pp. 1-18. Retrieved from the Internet: URL: http://www.infineon.com/dgdl/Current_Sensing_Rev.1.1.pdf?filed=db3a304332d040720132d939503e5f17 [retrieved on Oct. 18, 2016].
- Mouser Electronics, "LM317M 3-Terminal Adjustable Regulator with Overcurrent/Overtemperature Self Protection", Mar. 31, 2014 (Mar. 31, 2014), XP0555246104, Retrieved from the Internet: URL: <http://www.mouser.com/ds/2/405/lm317m-440423.pdf>, pp. 1-8.
- Mouser Electronics, "LM317 3-Terminal Adjustable Regulator with Overcurrent/Overtemperature Self Protection", Sep. 30, 2016 (Sep. 30, 2016), XP0555246104, Retrieved from the Internet: URL: <http://www.mouser.com/ds/2/405/lm317m-440423.pdf>, pp. 1-9.
- Cuper et al., "The Use of Near-Infrared Light for Safe and Effective Visualization of Subsurface Blood Vessels to Facilitate Blood Withdrawal in Children," Medical Engineering & Physics, vol. 35, No. 4, pp. 433-440 (2013).
- Yan et al, Comparison of the effects of Mg-6Zn and Ti-3Al-2.5V alloys on TGF-β/TNF-α/VEGF/b-FGF in the healing of the intestinal track in vivo, Biomed. Mater. 9 (2014), 11 pages.
- Pellicer et al. "On the biodegradability, mechanical behavior, and cytocompatibility of amorphous Mg72Zn23Ca5 and crystalline Mg70Zn23Ca5Pd2 alloys as temporary implant materials," J Biomed Mater Res Part A, 2013:101A:502-517.
- Anonymous, Analog Devices Wiki, Chapter 11: The Current Mirror, Aug. 20, 2017, 22 pages. <https://wiki.analog.com/university/courses/electronics/text/chapter-11?rev=1503222341>.
- Yan et al., "Comparison of the effects of Mg-6Zn and titanium on intestinal tract in vivo," J Mater Sci: Mater Med (2013), 11 pages.
- Brar et al., "Investigation of the mechanical and degradation properties of Mg-Sr and Mg-Zn-Sr alloys for use as potential biodegradable implant materials," J. Mech. Behavior of Biomed. Mater. 7 (2012) pp. 87-95.
- Texas Instruments: "Current Recirculation and Decay Modes," Application Report SLVA321—Mar. 2009; Retrieved from the Internet: URL: <http://www.ti.com/lit/an/slva321/slva321> [retrieved on Apr. 25, 2017], 7 pages.
- Qiu Li Loh et al.: "Three-Dimensional Scaffolds for Tissue Engineering Applications: Role of Porosity and Pore Size", Tissue Engineering Part B-Reviews, vol. 19, No. 6, Dec. 1, 2013, pp. 485-502.
- Gao et al., "Mechanical Signature Enhancement of Response Vibrations in the Time Lag Domain," Fifth International Congress on Sound and Vibration, Dec. 15-18, 1997, pp. 1-8.
- Trendafilova et al., "Vibration-based Methods for Structural and Machinery Fault Diagnosis Based on Nonlinear Dynamics Tools," In: Fault Diagnosis in Robotic and Industrial Systems, IConcept Press LTD, 2012, pp. 1-29.
- Youtube.com; video by Fibran (retrieved from URL <https://www.youtube.com/watch?v=vN2Qjt51gFQ>); (Year: 2018).
- Foot and Ankle: Core Knowledge in Orthopaedics; by DiGiovanni MD, Elsevier; (p. 27, left column, heading "Materials for Soft Orthoses", 7th bullet point); (Year: 2007).
- Lee, Youbok, "Antenna Circuit Design for RFID Applications," 2003, pp. 1-50, DS00710C, Microchip Technology Inc., Available: <http://ww1.microchip.com/downloads/en/AppNotes/00710c.pdf>.
- Kawamura, Atsuo, et al. "Wireless Transmission of Power and Information Through One High-Frequency Resonant AC Link Inverter for Robot Manipulator Applications," Journal, May/Jun. 1996, pp. 503-508, vol. 32, No. 3, IEEE Transactions on Industry Applications.

(56)

References Cited

OTHER PUBLICATIONS

Honda HS1332AT and ATD Model Info, powerequipment.honda.com [online], published on or before Mar. 22, 2016, [retrieved on May 31, 2019], retrieved from the Internet [URL: <https://powerequipment.honda.com/snowblowers/models/hss1332at-hss1332atd>] {Year: 2016}.

Slow Safety Sign, shutterstock.com [online], published on or before May 9, 2017, [retrieved on May 31, 2019], retrieved from the [https://www.shutterstock.com/image-vector/slow-safety-sign-twodimensional-turtle-symbolizing- . . .](https://www.shutterstock.com/image-vector/slow-safety-sign-twodimensional-turtle-symbolizing-...) see PDF in file for full URL] (Year: 2017).

Tutorial overview of inductively coupled RFID Systems, UPM, May 2003, pp. 1-7, UPM Rafsec, <<http://cdn.mobiusconsulting.com/papers/rfidsystems.pdf>>.

Schroeter, John, "Demystifying UHF Gen 2 RFID, HF RFID," Online Article, Jun. 2, 2008, pp. 1-3, <<https://www.edn.com/design/industrial-control/4019123/Demystifying-UHF-Gen-2-RFID-HF-RFID>>.

Adeeb, et al., "An Inductive Link-Based Wireless Power Transfer System for Biomedical Applications," Research Article, Nov. 14, 2011, pp. 1-12, vol. 2012, Article ID 879294, Hindawi Publishing Corporation.

Pushing Pixels (GIF), published on dribbble.com, 2013.

Sodium stearate C₁₈H₃₅NaO₂, Chemspider Search and Share Chemistry, Royal Society of Chemistry, pp. 1-3, 2015, <http://www.chemspider.com/Chemical-Structure.12639.html>, accessed May 23, 2016.

NF Monographs: Sodium Stearate, U.S. Pharmacopeia, http://www.pharmacopeia.cn/v29240/usp29nf24s0_m77360.html, accessed May 23, 2016.

Fischer, Martin H, "Colloid-Chemical Studies on Soaps", The Chemical Engineer, pp. 184-193, Aug. 1919.

V.K. Ahluwalia and Madhuri Goyal, A Textbook of Organic Chemistry, Section 19.11.3, p. 356, 2000.

A.V. Kasture and S.G. Wadodkar, Pharmaceutical Chemistry-II: Second Year Diploma in Pharmacy, Nirali Prakashan, p. 339, 2007.

Forum discussion regarding "Speed Is Faster", published on Oct 1, 2014 and retrieved on Nov. 8, 2019 from URL <https://english.stackexchange.com/questions/199018/how-is-that-correct-speed-is-faster-or-prices-are-cheaper> (Year: 2014).

* cited by examiner

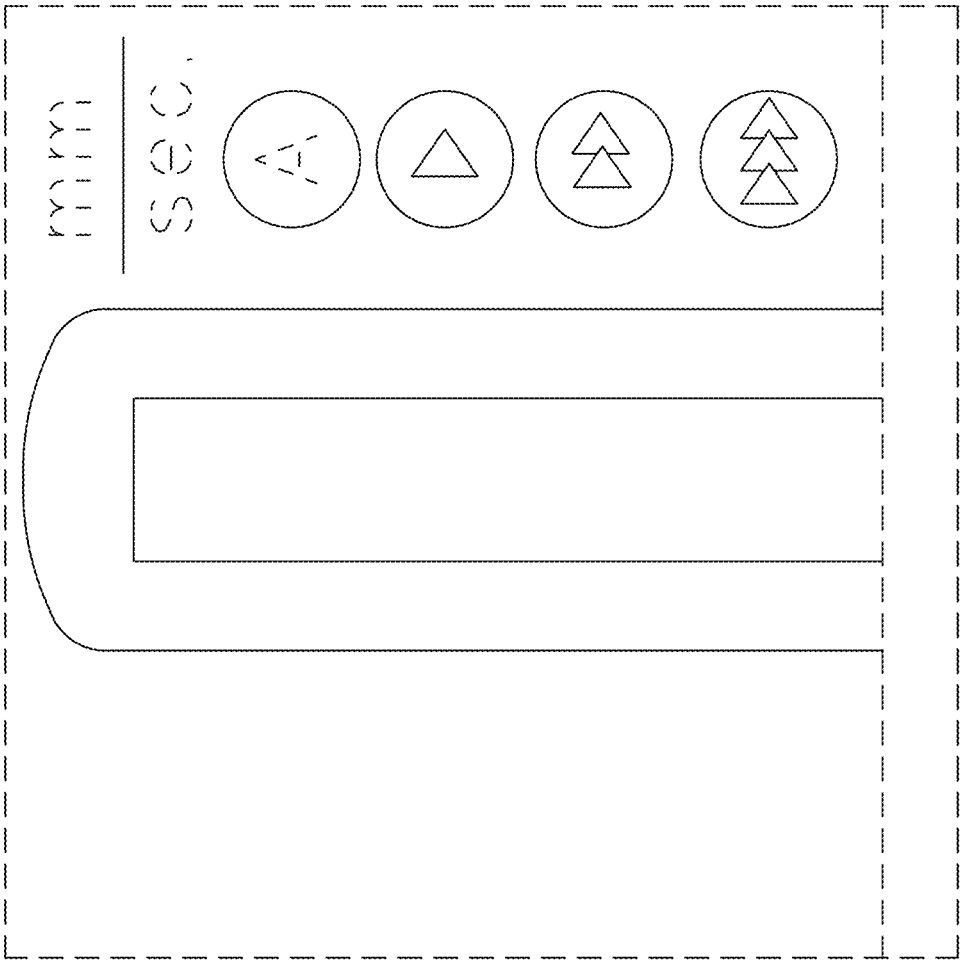


FIG. 1

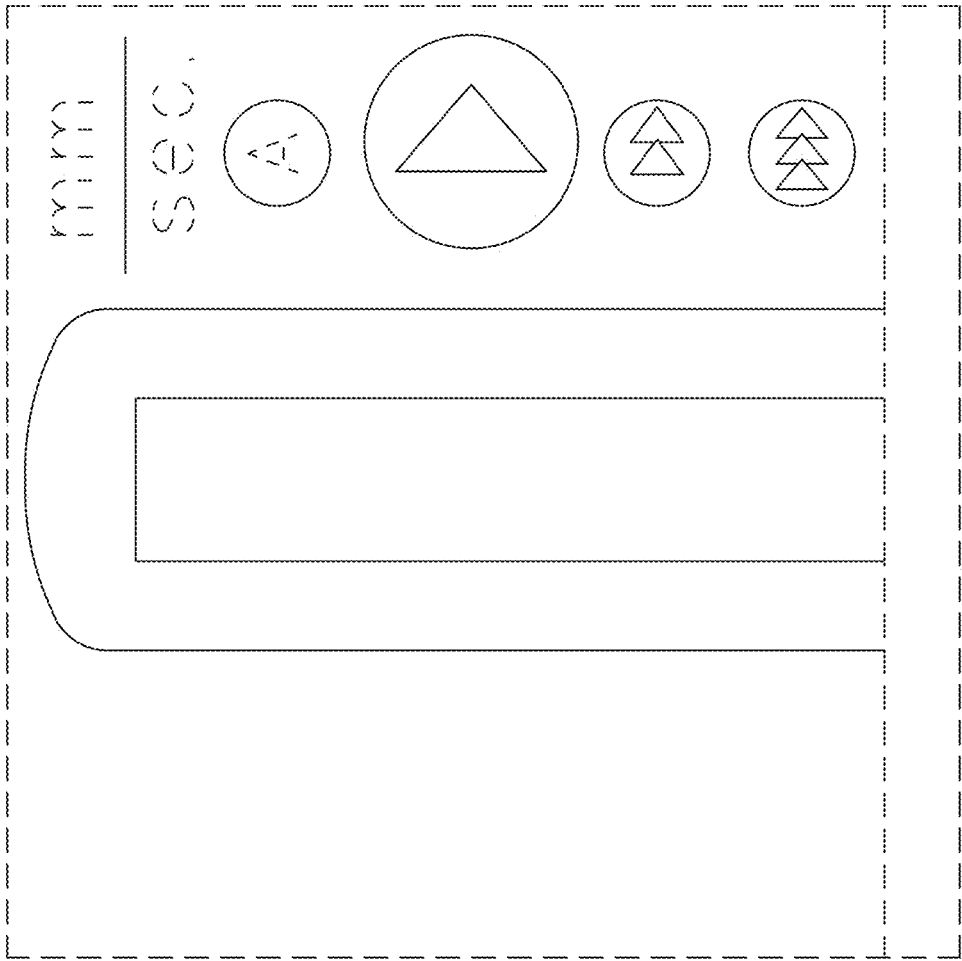


FIG. 2

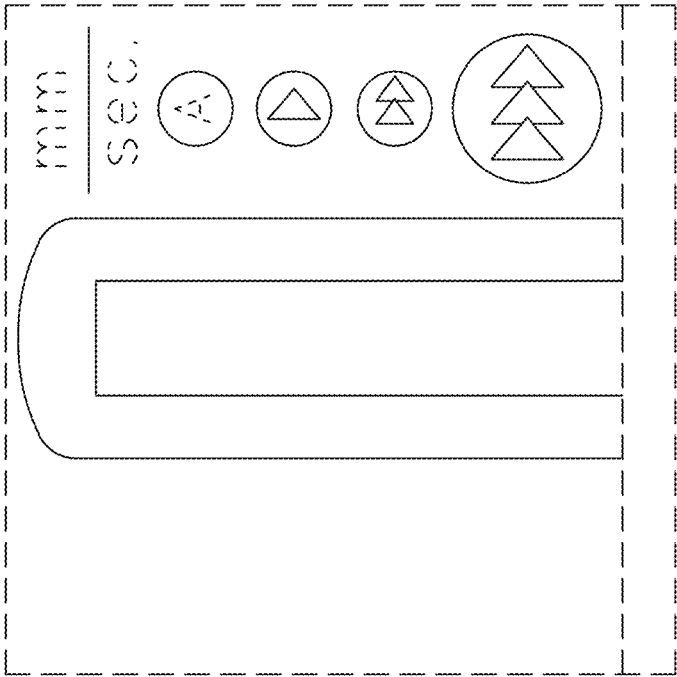


FIG. 4

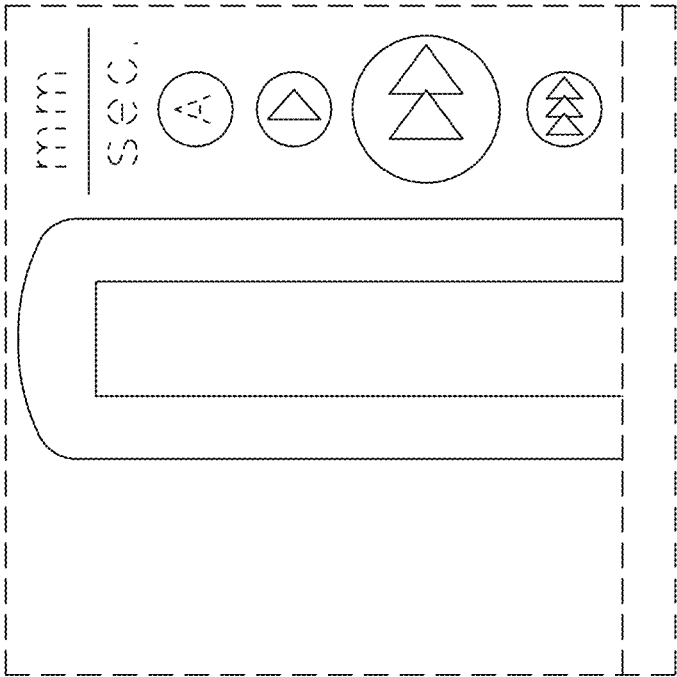


FIG. 3