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(12) United States Patent

Felger

(54) METHOD OF BILLING A PURCHASE MADE OVER A COMPUTER NETWORK

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Related U.S. Application Data

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(56) **References Cited**

U.S. PATENT DOCUMENTS

3,509,331 A	4/1970	Cutaia
3,598,973 A	8/1971	Brooks et al.
	(Cont	tinued)

FOREIGN PATENT DOCUMENTS

EP	0227327	1/1994
EP	0179898	11/1994
	(Ca	ntinued)

(Continued)

OTHER PUBLICATIONS

Philbrick, William "The Use of Factoring in International Commercial Transactions and the Need for Legal Uniformity as Applied to Factoring Trasactions Between the United States and Japan" Spring 1994, Commercial Law Journal, V99N1, pp. 141-156.*

(Continued)

Primary Examiner — Kelly Campen

(57) ABSTRACT

A method of effecting a sale over a computer network in which it is determined whether a user passes fraud control before effecting a sale over a computer network. Information associated with a method of payment, such as credit card information, debit card information, checking account information, a telephone service account, a cable television account, a utility service account, or an Internet service provider account, is requested from the user after the user passes the fraud control. Information associated with the method of payment is received from the user in real time. Method-ofpayment information is communicated to a payment authorization database, which can be located locally or remotely. The method-of-payment information includes the received information associated with the method of payment. Payment authorization information associated with the method of payment is received from the payment authorization database. A sale transaction is completed when the payment authorization information is affirmative. Sale charge information associated with the sale effected over the computer network is transmitted to the payment authorization database when the sale transaction is complete. The sale charge information includes information for charging the method of payment an amount representing a charge for the sale.

30 Claims, 11 Drawing Sheets



References Cited (56)

3,617,638			
3 639 686	A .	11/1071	Iochimsen et al
1019080		2/1072	Wellesset et al.
5,055,000	A	2/1972	walker et al.
3,656,178	Α	4/1972	De Maine et al.
3,675,211	Α	7/1972	Raviv
3,694,813	Α	9/1972	Loh et al.
2 701 108	A .	10/1072	Loh et al
3,701,108	A	2/10/72	
3,717,851	A	2/19/3	Cocke et al.
3,719,927	Α	3/1973	Michels et al.
3.769.579	Α	10/1973	Harnev
3 786 421	Δ	1/1974	Wostl et al
2 826 244	<u>^</u>	7/1074	Wahlhara
3,820,344	A	//19/4	waniberg
3,878,531	Α	4/19//5	McClelland
3,909,604	Α	9/1975	Monna
3.912.874	Α	10/1975	Botterell et al.
3 014 570	A .	10/1075	Shigemori et al
2,214,373	<u>,</u>	10/1975	Singemon et al.
3,910,380	A	10/19/5	Teixeira et al.
3,920,908	Α	11/1975	Kraus
3,924,108	Α	12/1975	Nakamura
RE28 701	E	1/1976	Edwards et al
2 027 025	1	2/1076	Pootbroud
3,937,923	A	2/19/0	Бооштоуа
3,938,090	A	2/19/6	Borison et al.
3,946,217	Α	3/1976	Tsujikawa et al.
3.946.220	A	3/1976	Brobeck et al.
3 947 660	Δ	3/1976	Saito
3,056,615	A .	5/1076	Anderson et al
3,930,013	A	5/1970	Anderson et al.
3,963,910	A	6/19/6	Enomoto et al.
4,003,030	Α	1/1977	Takagi et al.
4,021,782	Α	5/1977	Hoerning
4.023.012	Α	5/1977	Ano et al.
4 027 140	Δ	5/1977	Fowler et al
4 048 475	Å	0/1077	Vashida
4,040,475	A .	1/1079	Traslar
4,070,564	A	1/19/8	Tucker
4,070,648	A	1/19/8	Mergenthaler et al.
4,075,696	Α	2/1978	Shinoda et al.
4,084,238	Α	4/1978	Masuo
4.093.998	Α	6/1978	Miller
4 005 738	Δ	6/1078	Masuo
4 106 060	A .	0/1070	Chamman In
4,100,000	A	0/1970	Chapman, Ji
4,138,733	A	2/19/9	ladakuma et al.
4,142,235	Α	2/1979	Tadakuma et al.
4,144,567	Α	3/1979	Tadakuma et al.
4.156.259	Α	5/1979	Sato
4 1 59 533	Δ	6/1979	Sakurai
4 173 026	Å	10/1070	Doming
4,175,020	A	10/1979	Denning
4.1/9.723	А	12/19/9	Spencer
4,186,439	Α	1/1980	Snimura et al.
4,186,439 4,187,498	A A	1/1980 2/1980	Creekmore
4,186,439 4,187,498 4,188,962	A A A	1/1980 2/1980 2/1980	Creekmore Onoe et al.
4,186,439 4,187,498 4,188,962 4,189,774	A A A A	1/1980 2/1980 2/1980 2/1980	Creekmore Onoe et al. Kashio
4,186,439 4,187,498 4,188,962 4,189,774 4,191,999	A A A A	1/1980 2/1980 2/1980 2/1980 3/1980	Creekmore Onoe et al. Kashio
4,186,439 4,187,498 4,188,962 4,189,774 4,191,999	A A A A A	1/1980 2/1980 2/1980 2/1980 3/1980 4/1080	Shimura et al. Creekmore Onoe et al. Kashio Kashio
4,186,439 4,187,498 4,187,498 4,188,962 4,189,774 4,191,999 4,200,770	A A A A A A	1/1980 2/1980 2/1980 2/1980 3/1980 4/1980	Shimura et al. Creekmore Onoe et al. Kashio Kashio Hellman et al.
4,186,439 4,187,498 4,187,498 4,188,962 4,189,774 4,191,999 4,200,770 4,213,179	A A A A A A A	1/1980 2/1980 2/1980 2/1980 3/1980 4/1980 7/1980	Snimura et al. Creekmore Onoe et al. Kashio Kashio Hellman et al. Hamano et al.
4,186,439 4,187,498 4,187,498 4,188,962 4,189,774 4,191,999 4,200,770 4,213,179 4,218,582	A A A A A A A A	1/1980 2/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980	Snimura et al. Creekmore Onoe et al. Kashio Kashio Hellman et al. Hamano et al. Hellman et al.
4,186,439 4,187,498 4,187,498 4,188,962 4,189,774 4,191,999 4,200,770 4,213,179 4,218,582 4,220,991	A A A A A A A A A	1/1980 2/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980	Snimura et al. Creekmore Onoe et al. Kashio Kashio Hellman et al. Hamano et al. Hallman et al. Hamano et al.
4,186,439 4,187,498 4,188,962 4,189,774 4,191,999 4,200,770 4,213,179 4,218,582 4,220,991 4,231,511	A A A A A A A A A A	1/1980 2/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 11/1980	Snimura et al. Creekmore Onoe et al. Kashio Kashio Hellman et al. Hamano et al. Hamano et al. Campanella et al.
4,186,439 4,187,498 4,187,498 4,188,962 4,189,774 4,191,999 4,200,770 4,213,179 4,218,582 4,220,991 4,231,511 4,231,511	A A A A A A A A A A A	1/1980 2/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 11/1980 12/1980	Snimura et al. Creekmore Onoe et al. Kashio Kashio Hellman et al. Hamano et al. Hamano et al. Campanella et al. Clever
4,186,439 4,187,498 4,187,498 4,188,962 4,189,774 4,191,999 4,200,770 4,213,179 4,218,582 4,220,991 4,231,511 4,237,483 2,257,483	A A A A A A A A A A	1/1980 2/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 11/1980 12/1980	Snimura et al. Creekmore Once et al. Kashio Kashio Hellman et al. Hamano et al. Hellman et al. Campanella et al. Clever Hamor
$\begin{array}{c} 4,186,439\\ 4,187,498\\ 4,187,498\\ 4,188,962\\ 4,189,774\\ 4,191,999\\ 4,200,770\\ 4,213,179\\ 4,218,582\\ 4,220,991\\ 4,231,511\\ 4,237,483\\ 4,245,138\\ 4,24$	A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 11/1980 12/1980 1/1981	Snimura et al. Creekmore Onoe et al. Kashio Kashio Hellman et al. Hamano et al. Hamano et al. Campanella et al. Clever Harper
$\begin{array}{c} 4,186,439\\ 4,187,498\\ 4,188,962\\ 4,189,774\\ 4,200,770\\ 4,200,770\\ 4,213,179\\ 4,220,991\\ 4,231,511\\ 4,237,483\\ 4,225,138\\ 4,245,311\\ \end{array}$	A A A A A A A A A A A A A	1/1980 2/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 11/1980 12/1980 1/1981 1/1981	Snimura et al. Creekmore Onoe et al. Kashio Kashio Hellman et al. Hamano et al. Hamano et al. Campanella et al. Clever Harper Nakamura
4,186,439 4,187,498 4,187,498 4,188,962 4,189,774 4,200,770 4,213,179 4,218,582 4,220,991 4,231,511 4,237,483 4,245,138 4,245,138 4,245,138	A A A A A A A A A A A A A	1/1980 2/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 11/1980 12/1980 1/1981 1/1981 2/1981	Snimura et al. Creekmore Once et al. Kashio Kashio Hellman et al. Hamano et al. Hellman et al. Hamano et al. Campanella et al. Clever Harper Nakamura Uchida et al.
$\begin{array}{c} 4,186,439\\ 4,187,498\\ 4,188,962\\ 4,189,774\\ 4,191,999\\ 4,200,770\\ 4,213,179\\ 4,218,582\\ 4,220,991\\ 4,231,511\\ 4,237,483\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,251,867\\ 4,254,441\\ \end{array}$	A A A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 11/1980 12/1980 1/1981 1/1981 1/1981 3/1981	Snimura et al. Creekmore Onoe et al. Kashio Kashio Hellman et al. Hamano et al. Hamano et al. Campanella et al. Clever Harper Nakamura Uchida et al. Fisher
4,186,439 4,187,498 4,188,962 4,189,774 4,200,770 4,200,770 4,213,179 4,220,991 4,231,511 4,237,483 4,245,138 4,245,138 4,245,1867 4,254,441 4,255,667	A A A A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 12/1980 1/1981 1/1981 2/1981 3/1981	Snimura et al. Creekmore Onoe et al. Kashio Kashio Hellman et al. Hamano et al. Hellman et al. Hamano et al. Campanella et al. Clever Harper Nakamura Uchida et al. Fisher Buhler, III
$\begin{array}{c} 4,186,439\\ 4,187,498\\ 4,187,498\\ 4,188,962\\ 4,189,774\\ 4,191,999\\ 4,200,770\\ 4,213,179\\ 4,218,582\\ 4,220,991\\ 4,231,511\\ 4,237,483\\ 4,245,311\\ 4,251,867\\ 4,254,441\\ 4,255,697\\ 4,261,036\\ 4,26$	A A A A A A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 11/1980 12/1980 12/1981 1/1981 3/1981 3/1981	Snimura et al. Creekmore Once et al. Kashio Kashio Hellman et al. Hamano et al. Halman et al. Hamano et al. Campanella et al. Clever Harper Nakamura Uchida et al. Fisher Buhler, III Nazasaka et al
4,186,439 4,187,498 4,188,962 4,189,774 4,191,999 4,200,770 4,213,179 4,213,179 4,213,179 4,213,179 4,237,483 4,245,138 4,245,138 4,245,138 4,255,697 4,251,036 4,261,036	A A A A A A A A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 11/1980 12/1980 1/1981 3/1981 3/1981 4/1981	Snimura et al. Creekmore Once et al. Kashio Kashio Hellman et al. Hamano et al. Hellman et al. Hamano et al. Campanella et al. Clever Harper Nakamura Uchida et al. Fisher Buhler, III Nagasaka et al. Harigone at al.
4,186,439 4,187,498 4,188,962 4,189,774 4,191,999 4,200,770 4,213,179 4,218,582 4,220,991 4,231,511 4,237,483 4,245,138 4,245,138 4,245,138 4,251,867 4,251,036 4,264,036 4,262,333 4,264,792	A A A A A A A A A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 11/1980 12/1980 1/1981 2/1981 3/1981 3/1981 4/1981 4/1981	Snimura et al. Creekmore Onoe et al. Kashio Hellman et al. Hamano et al. Hellman et al. Hamano et al. Campanella et al. Clever Harper Nakamura Uchida et al. Fisher Buhler, III Nagasaka et al. Horigome et al.
$\begin{array}{c} 4,186,439\\ 4,187,498\\ 4,188,962\\ 4,189,774\\ 4,91,999\\ 4,200,770\\ 4,213,179\\ 4,218,582\\ 4,220,991\\ 4,231,511\\ 4,231,511\\ 4,237,483\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,255,697\\ 4,261,036\\ 4,262,333\\ 4,264,782\\ 4,264$	A A A A A A A A A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 11/1980 1/1981 1/1981 3/1981 3/1981 4/1981 4/1981	Snimura et al. Creekmore Once et al. Kashio Hellman et al. Hamano et al. Halman et al. Hamano et al. Campanella et al. Clever Harper Nakamura Uchida et al. Fisher Buhler, III Nagasaka et al. Horigome et al. Konheim
$\begin{array}{c} 4,186,439\\ 4,187,498\\ 4,187,498\\ 4,188,962\\ 4,189,774\\ 4,191,999\\ 4,200,770\\ 4,213,179\\ 4,213,179\\ 4,218,582\\ 4,220,991\\ 4,231,511\\ 4,237,483\\ 4,245,311\\ 4,251,867\\ 4,254,441\\ 4,255,697\\ 4,261,036\\ 4,262,333\\ 4,264,782\\ 4,276,593\\ 4,276,593\\ \end{array}$	A A A A A A A A A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 8/1980 9/1980 11/1980 12/1980 12/1981 3/1981 3/1981 4/1981 4/1981 6/1981	Snimura et al. Creekmore Once et al. Kashio Hellman et al. Hamano et al. Hamano et al. Hamano et al. Campanella et al. Clever Harper Nakamura Uchida et al. Fisher Buhler, III Nagasaka et al. Horigome et al. Konheim Hansen
$\begin{array}{c} 4,186,439\\ 4,187,498\\ 4,188,962\\ 4,189,774\\ 4,191,999\\ 4,200,770\\ 4,213,179\\ 4,218,582\\ 4,220,991\\ 4,231,511\\ 4,237,483\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,255,697\\ 4,261,036\\ 4,262,333\\ 4,264,782\\ 4,276,598\\ 4,276,598\\ \end{array}$	A A A A A A A A A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 11/1980 12/1980 1/1981 3/1981 4/1981 4/1981 4/1981 6/1981	Snimura et al. Creekmore Onoe et al. Kashio Kashio Hellman et al. Hamano et al. Hamano et al. Campanella et al. Clever Harper Nakamura Uchida et al. Fisher Buhler, III Nagasaka et al. Horigome et al. Konheim Hansen Inoue et al.
$\begin{array}{c} 4,186,439\\ 4,187,498\\ 4,188,962\\ 4,189,774\\ 4,191,999\\ 4,200,770\\ 4,213,179\\ 4,218,582\\ 4,220,991\\ 4,231,511\\ 4,231,511\\ 4,237,483\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,255,697\\ 4,254,441\\ 4,255,697\\ 4,261,036\\ 4,262,333\\ 4,264,782\\ 4,276,598\\ 4,277,837\\ \end{array}$	A A A A A A A A A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 12/1980 12/1980 1/1981 1/1981 3/1981 4/1981 4/1981 6/1981 6/1981 7/1981	Snimura et al. Creekmore Once et al. Kashio Hellman et al. Hamano et al. Hamano et al. Hamano et al. Clever Harper Nakamura Uchida et al. Fisher Buhler, III Nagasaka et al. Horigome et al. Konheim Hansen Inoue et al. Stuckert
$\begin{array}{c} 4,186,439\\ 4,187,498\\ 4,187,498\\ 4,188,962\\ 4,189,774\\ 4,200,770\\ 4,213,179\\ 4,200,770\\ 4,213,179\\ 4,218,582\\ 4,220,991\\ 4,231,511\\ 4,231,483\\ 4,245,311\\ 4,251,867\\ 4,254,441\\ 4,255,697\\ 4,262,333\\ 4,264,782\\ 4,276,593\\ 4,276,593\\ 4,276,593\\ 4,277,837\\ 4,285,043\end{array}$	A A A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 8/1980 8/1980 11/1980 12/1980 12/1980 1/1981 2/1981 3/1981 4/1981 4/1981 4/1981 6/1981 7/1981	Snimura et al. Creekmore Once et al. Kashio Hellman et al. Hamano et al. Halman et al. Hamano et al. Campanella et al. Campanella et al. Clever Harper Nakamura Uchida et al. Fisher Buhler, III Nagasaka et al. Horigome et al. Konheim Hansen Inoue et al. Stuckert Hashimoto et al.
$\begin{array}{c} 4,186,439\\ 4,187,498\\ 4,187,498\\ 4,188,962\\ 4,189,774\\ 4,189,774\\ 4,213,179\\ 4,213,179\\ 4,213,179\\ 4,213,179\\ 4,213,1511\\ 4,237,483\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,255,697\\ 4,261,036\\ 4,262,333\\ 4,264,782\\ 4,267,593\\ 4,267,593\\ 4,276,598\\ 4,277,837\\ 4,285,043\\ 4,289,943\\ \end{array}$	A A A A A A A A A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 11/1980 12/1980 11/1981 1/1981 3/1981 3/1981 4/1981 4/1981 6/1981 6/1981 7/1981 8/1981	Snimura et al. Creekmore Once et al. Kashio Hellman et al. Hamano et al. Hamano et al. Hamano et al. Campanella et al. Campanella et al. Campanella et al. Clever Harper Nakamura Uchida et al. Fisher Buhler, III Nagasaka et al. Horigome et al. Konheim Hansen Inoue et al. Stuckert Hashimoto et al.
$\begin{array}{c} 4,186,439\\ 4,187,498\\ 4,188,962\\ 4,189,774\\ 4,189,774\\ 4,189,774\\ 4,218,582\\ 4,200,770\\ 4,213,179\\ 4,218,582\\ 4,220,991\\ 4,231,483\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,262,333\\ 4,264,782\\ 4,276,593\\ 4,276,598\\ 4,277,837\\ 4,285,043\\ 4,285,043\\ 4,299,943\\ 4,299,941\\ 4,293,011\\ 4,29$	A A A A A A A A A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 9/1980 11/1980 12/1980 12/1980 1/1981 3/1981 3/1981 4/1981 4/1981 6/1981 6/1981 7/1981 8/1981 9/1981	Snimura et al. Creekmore Onoe et al. Kashio Kashio Hellman et al. Hamano et al. Hamano et al. Campanella et al. Clever Harper Nakamura Uchida et al. Fisher Buhler, III Nagasaka et al. Horigome et al. Konheim Hansen Inoue et al. Stuckert Hashimoto et al. Sado Oonishi
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$\begin{array}{c} 4,186,439\\ 4,187,498\\ 4,188,962\\ 4,189,774\\ 4,189,774\\ 4,191,999\\ 4,200,770\\ 4,213,179\\ 4,218,582\\ 4,220,991\\ 4,231,511\\ 4,237,483\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,245,138\\ 4,255,697\\ 4,251,867\\ 4,256,4411\\ 4,255,697\\ 4,261,036\\ 4,262,333\\ 4,264,782\\ 4,276,598\\ 4,277,837\\ 4,285,043\\ 4,276,598\\ 4,277,837\\ 4,289,943\\ 4,289,943\\ 4,295,039\\ 4,296,404\\ 4,303,904\\ 4,303,904\\ 4,305,050\\ 6,252\\ 4,275\\ 4,285,053\\ 4,289,433\\ 4,289,943\\ 4,295,039\\ 4,296,404\\ 4,303,904\\ 4,303,904\\ 4,305,050\\ 4,295,059\\ $	A A A A A A A A A A A A A A A A A A A	1/1980 2/1980 2/1980 3/1980 4/1980 7/1980 8/1980 11/1980 12/1980 12/1980 12/1980 12/1981 3/1981 3/1981 4/1981 4/1981 4/1981 6/1981 6/1981 10/1981 10/1981 10/1981 12/1981 12/1981	Snimura et al. Creekmore Once et al. Kashio Kashio Hellman et al. Hamano et al. Hamano et al. Hamano et al. Campanella et al. Campanella et al. Campanella et al. Clever Harper Nakamura Uchida et al. Fisher Buhler, III Nagasaka et al. Horigome et al. Konheim Hansen Inoue et al. Stuckert Hashimoto et al. Stuckert Sheldon Chasek Kobayashi et al.

4,307,268	A	12/1981	Harper
4,312,037	A A	2/1982	Gordon
4,317,172	Â	2/1982	Nakano
4,320,387	Α	3/1982	Powell
4,321,671	A	3/1982	Ohsako
4,321,672	A	3/1982	Braun et al.
4,322,387	A	3/1982	Andersson et al.
4,322,796	Ā	3/1982	Uchida et al.
4,325,441	Α	4/1982	Nakatani et al.
D264,467	S	5/1982	Fischer
4,528,544	A	5/1982	Eskin et al
4,351,982	A	9/1982	Miller et al.
4,360,872	Α	11/1982	Suzuki et al.
4,369,334	A	1/1983	Nakatani et al.
4,381,300	A	6/1983	Havman et al
4,389,707	Ā	6/1983	Tsuzuki
4,396,985	Α	8/1983	Ohara
4,398,250	A	8/1983	Hosono
4,399,508	A A	8/1983	Nakatani et al. Bayliss et al
4.408.292	Â	10/1983	Nakatani et al.
4,412,304	Α	10/1983	Yamakita
4,412,306	A	10/1983	Moll
4,415,065	A	11/1983	Sandstedt Takabashi et al
4.424.414	Ā	1/1984	Hellman et al.
4,424,566	Α	1/1984	Tsuzuki
4,424,567	A	1/1984	Yasutake
4,425,619	A	1/1984	Matsuda et al.
4,428,049	A	2/1984	Nakatani et al.
4,435,767	Ā	3/1984	Nakatani et al.
4,436,992	Α	3/1984	Simjian
4,439,636	A	3/1984	Newkirk et al.
4,441,100	A	4/1984	Nishimura
4,449,040	A	5/1984	Matsuoka et al.
4,449,186	A	5/1984	Kelly et al.
4,450,526	A A	5/1984 6/1984	Nakatani et al. Benton
4.455.620	Â	6/1984	Watanabe et al.
4,458,315	Α	7/1984	Uchenick
4,458,317	A	7/1984	Horigome et al.
4,464,650	A A	8/1984 8/1984	Eastman et al. Benhase et al
4,468,750	Â	8/1984	Chamoff et al.
4,471,434	Α	9/1984	Iwawaki
4,481,599	A	11/1984	Ootsuka
4,482,970	A A	11/1984	Isnikawa Uesugi
4,485,441	A	11/1984	Nakatani et al.
4,491,934	Α	1/1985	Heinz
4,493,037	A	1/1985	Takano et al.
4,497,201	A A	2/1985	Ferris et al. Tsuzuki
4,502,120	A	2/1985	Ohnishi et al.
4,503,503	Α	3/1985	Suzuki
4,508,962	A	4/1985	Yamasaki
4,509,129	A A	4/1985	Yatsunami et al. Mochizuki et al
4.518.852	Â	5/1985	Stockburger et al.
4,521,677	Α	6/1985	Sarwin
4,525,799	A	6/1985	Okawa et al.
4,529,870	A	7/1985	Chaum
4.532.588	Ā	7/1985	Foster
4,532,641	A	7/1985	Nishimura
4,533,791	Α	8/1985	Read et al.
4,538,057	A	8/1985	Iwagami et al.
4,546,382	A A	10/1985	McKenna et al.
4 558 302	A A	12/1985	Kurianu et al. Welch
4,558,413	A	12/1985	Schmid et al.
4 562 341	Δ	12/1985	Ohmae et al.
1,502,511	71		

(56) **References Cited**

4 567 359 4	1/1986	Lockwood
4,507,000	1/1000	Manager at al
4,507,000 A	1/1980	Massey et al.
4.569.421 A	2/1986	Sandstedt
1 570 223 1	2/1086	Voshimoto
4,570,225 1	2/1000	
4,578,530 A	3/1986	Zeidler
4.585.929 A	4/1986	Brown et al.
1 587 370 1	5/1086	Masuda
4,507,575 2	5/1900	Wasuda
4,589,069 A	5/1986	Endo et al.
4.590.470 A	. 5/1986	Koenig
1 501 854 4	5/1086	Robinson
4,551,654 8	G/1980	Koomson
4,594,663 A	6/1986	Nagata et al.
4.594.664 A	6/1986	Hashimoto
1 505 085 1	6/1086	Sakakiya
4,595,965 P	0/1980	Sakakiya
4,598,288 A	. 7/1986	Yarbrough et al.
4.602.279 A	7/1986	Freeman
1 607 334 4	8/1086	Shiono et al
1,007,007	0/1000	
4,607,335 A	8/1986	Mizuno
4,608,486 A	. 8/1986	Berstein et al.
4 611 286 4	0/1086	Nichimura et al
4,011,200 /	0/1000	D (1
4,612,532 A	9/1980	Bacon et al.
4,614,861 A	. 9/1986	Pavlov et al.
4 626 844 A	12/1986	Mann et al
4 626,000	12/1006	Varmai at al
4,020,990 P	12/1980	Komai et al.
4,628,452 A	. 12/1986	Shiono et al.
4.630.108 A	12/1986	Gomersall
4,620,200	12/1006	Obreas et al
4,030,200 A	12/1980	Onmae et al.
4,630,201 A	. 12/1986	White
4 633 396 A	12/1986	Komai et al
1,000,000 1	1/1007	Hala at al
4,054,645 P	1/198/	Hale et al.
4,635,189 A	. 1/1987	Kendall
4.635.196 A	1/1987	Nakamura et al.
1 638 435	1/1097	Matsuda at al
4,030,435 2	1/1907	Maisuda et al.
4,646,145 A	2/1987	Percy et al.
4.646.235 A	2/1987	Hirosawa et al.
4 648 061 4	3/1087	Foster
4,040,001	2/1007	
4,649,481 A	. 3/1987	Takanashi
4,651,279 A	. 3/1987	Suzuki
4 658 093 A	4/1987	Hellman
4,050,055 2	4/1007	
4,038,290 P	4/198/	McKenna et al.
4,658,370 A	. 4/1987	Erman et al.
4 661 658 A	4/1987	Matvas
4 661 009 4	4/1097	Hamana at al
4,001,908 P	4/198/	Hamano et al.
4,669,596 A	. 6/1987	Capers et al.
4.670.838 A	6/1987	Kawata
4 672 542	6/1027	Mataui at al
4,072,545 P	0/1907	Maisur et al.
4,673,802 A	6/198/	Ohmae et al.
4.675.515 A	6/1987	Lucero
A 677 A34 A	6/1087	Fascenda
4,077,905	7/1007	Tascenda
4,678,895 A	//198/	lateisi et al.
4,679,154 A	. 7/1987	Blanford
4 680 707 A	7/1987	Iida
1,000,101 1	7/1007	Vomemata
4,085,550 P	//198/	ramamoto
4,683,553 A	. 7/1987	Mollier
4,688.173 A	8/1987	Mitarai et al.
4 688 174 4	8/1087	Sakamoto
4,000,174 /	0/1007	
4,689,478 A	8/198/	Hale et al.
4,691,283 A	. 9/1987	Matsuda et al.
4 694 408 A	9/1987	Zaleski
4 707 795	11/1007	Talsani
4,707,785 A	11/1987	Takagi
4,713,760 A	. 12/1987	Yamada et al.
4713780 A	12/1987	Schultz et al
4 712 785 4	12/1097	Antonalli at al
4,715,785 P	12/198/	Antonem et al.
4,713,837 A	. 12/1987	Gordon
4.714.992 A	12/1987	Gladnev et al.
4 7 2 2 0 5 4 4	1/1000	Varazzu et el
ч,722,034 P	1/1900	TOTOZU CL AL
4,723,284 A	. 2/1988	Munck et al.
4.725.949 A	2/1988	Dreher
4 720 007	2/1000	Takaoka at al
ч,729,097 P	J/1900	TAKAUKA CL AL
4,730,259 A	3/1988	Gallant
4,730.348 A	3/1988	MacCrisken
1731 957	2/1000	Fujiware of al
н,134,031 P	5/1900	rujiwara et al.
4,734,858 A	. 3/1988	Schlafly
		D 1
4.734.931 4	3/1988	Bourg et al
4,734,931 A	3/1988	Bourg et al.
4,734,931 A 4,745,468 A	3/1988 5/1988	Bourg et al. Von Kohorn

4.750.120	A	6/1988	Takahashi
4,750,120		C/1000	
4,750,201	A	6/1988	Hodgson et al.
4.751.635	A	6/1988	Kret
1751 641		6/1000	Calling In stal
4,731,041	A	0/1988	Comms, Jr. et al.
4.752.874	A	6/1988	Mevers
1 752 975	A .	6/1000	Takabayashi
4,752,875	A	0/1900	TakeDayasiii
4,755,940	Α	7/1988	Brachtl et al.
1757 767	٨	7/1000	Dialain
4,757,207	Α	//1900	NISKIII
4,757,448	A	7/1988	Takagi
1 758 714	۸	7/1088	Carlson et al
4,750,714	А	//1900	Carison et al.
4,761,808	A	8/1988	Howard
1762 277	٨	8/1088	Ashford at al
4,705,277	A	0/1200	Asinoiu et al.
4,766,293	A	8/1988	Boston
1 766 205	Δ	8/1088	Davis at al
4,700,295	<u>n</u>	0/1900	Davis et al.
4,768,144	Α	8/1988	Winter et al.
4 771 382	Δ	0/1088	Shiono et al
4,771,362	<u></u>	0/1000	
4,771,383	Α	9/1988	Takahashi
1 771 461	Α	0/1088	Matyas
4,771,401	11	10/1000	iviai yas
4,775,935	Α	10/1988	Yourick
4 775 936	Δ	10/1988	Iung
1,775,950		10/1000	Jung 1 1
4,776,540	A	10/1988	westerlund
4.779.224	A	10/1988	Moselev et al.
4,700,021		10/1000	
4,780,821	А	10/1988	Crossley
4.785.393	A	11/1988	Chu et al.
1 706 700	~	11/1000	NT-::
4,/80,/88	А	11/1988	Noji
4.787.037	A	11/1988	Ootsuka
1 700 110		11/1000	Taulari
4,788,418	А	11/1988	ISUKUI
4.788.420	A	11/1988	Chang et al.
1 700 627	A.	11/1000	Tamami
4,/88,03/	A	11/1988	Tamaru
4,790,007	Α	12/1988	Richter et al.
1 701 281	٨	12/1088	Johnson at al
4,791,201	A	12/1900	Johnsen et al.
4,792,968	A	12/1988	Katz
1 705 800	٨	1/1080	Goldman
4,755,850	<u>,</u>	1/1/00	Goldman
4,796,292	Α	1/1989	Thomas
4 797 540	Δ	1/1989	Kimizu
1,700,150	11	1/1000	Cl i i
4,799,156	А	1/1989	Shavit et al.
4 805 020	Δ	2/1989	Greenberg
1,005,020		2/1000	Greenberg
4,805,207	А	2/1989	MCNUTT et al.
4.809.219	A	2/1989	Ashford et al.
4,011,210		2/1000	T in 1
4,811,219	А	3/1989	Touji et al.
4.812.628	A	3/1989	Boston et al.
4 812 620		2/1020	O'Nail et al
4,812,029	A	3/1989	O Nell et al.
4.814.746	A	3/1989	Miller et al.
1 814 085	٨	2/1020	Swietek
4,014,905	<u>.</u>	5/1909	Swistak
4,817,041	A	3/1989	Sakamoto
4 817 050	Δ	3/1080	Komatsu et al
1,017,050		4/1000	D i i i
4,818,854	А	4/1989	Davies et al.
4 821 186	Δ	$\frac{4}{1989}$	Munakata et al
4,022,264	<u>,</u>	4/1000	Densing of the
4,823,264	А	4/1989	Deming
4.825.045	A	4/1989	Humble
4,007,410		5/1000	
4,02/,410	A	5/1969	Gerstement
4,827,508	A	5/1989	Shear
1 820 120	٨	5/1080	Komai et al
4,029,429	A	5/1989	Romai et al.
4,831,526	Α	5/1989	Luchs et al.
4 833 308	Δ	5/1989	Humble
4,000,000	<u>,</u>	5/1000	A
4,833,608	A	5/1989	Ауа
4,833.609	Α	5/1989	Grulke, Jr.
1 925 272		5/1090	Combride at al
4,833,372	A	3/1989	Gombrien et al.
4,837,422	Α	6/1989	Dethloff et al.
1 837 708	Δ	6/1080	Cohen et al
4,037,790	<u>n</u>	0/1909	Collell et al.
4,840,344	Α	6/1989	Moroe
4 841 441	Δ	6/1080	Nivon et al
4 0 41 4 42	4	6/1000	TT OF CLAIM
4,841,442	Α	0/1989	ноѕоуата
4.843.547	Α	6/1989	Fuvama et al.
1 942 560		C/1090	T - 1. : 1
4,845,500	А	0/1989	icnikawa
4,845.625	Α	7/1989	Stannard
1 847 762	Α.	7/1000	Suzuki
7,047,702	A	1/1989	SUZUKI
4,849,878	Α	7/1989	Roy
4 850 007	Δ	7/1080	Marino et al
7,050,007	A	1/1909	wanno et al.
4,851,650	Α	7/1989	Kitade
1852 606	٨	0/1000	Mukhariaa
4,000,090	А	0/1989	wuknerjee
4,853.853	Α	8/1989	Yamamura et al
1 955 000	A	0/1000	Shimode at al
4,000,908	A	0/1989	sinnioda et al.
4.859.837	Α	8/1989	Halpern
1 950 000		0/1000	Oliber
4,839,838	А	8/1989	Okinafu
4.860.352	Α	8/1989	Laurance et al
1 966 624		0/1000	Dahah at -1
4,000,034	A	9/1989	Report et al.
4,868.735	Α	9/1989	Moller et al.
,,			
4 870 577	٨	0/1000	Karacowa at al

(56) **References** Cited

4 872 113	Δ	10/1080	Dinerstein
4,072,115		10/1000	Differsterin
4,873,631	А	10/1989	Nathan et al.
4.875.163	A	10/1989	Ishii
1 875 206	Â	10/1020	Nichola of al
4,8/3,200	A	10/1989	Michols et al.
4,876,541	Α	10/1989	Storer
4 876 592	Α	10/1989	Von Kohorn
1,070,372	<u>, </u>	10/1000	C
4,8/6,/11	А	10/1989	Curtin
4.877.947	Α	10/1989	Mori
4 877 050	A .	10/1020	Halmarn
4,877,930	A	10/1989	пареш
4,879,648	Α	11/1989	Cochran et al.
4 870 640	Δ	11/1080	Ichii
1,079,019		11/1000	
4,8/9,650	A	11/1989	Kurimoto et al.
4.880.493	Α	11/1989	Ashby et al.
4 994 212		11/1020	Stateman
4,004,212	A	11/1909	Stutsman
4,884,217	Α	11/1989	Skeirik et al.
4 887 209	Δ	12/1989	Sugishima
4,007,209		12/1000	NT 1 / 1
4,887,210	A	12/1989	Nakamura et al.
4.888.771	A	12/1989	Benignus et al.
1 888 708	٨	12/1080	Forneet
4,000,790	<u>A</u>	12/1909	
4,890,240	Α	12/1989	Loeb et al.
4.891.766	Α	1/1990	Derr et al.
1 803 236	Α.	1/1000	Obrighi et al
4,095,250	A	1/1990	Omnishi et al.
4,893,237	A	1/1990	Unno
4 899 136	Δ	2/1990	Beard et al
4,002,001	<u>,</u>	2/1000	Is a loss
4,902,881	А	2/1990	Janku
4,903,200	Α	2/1990	Mook, Jr.
1 006 828	٨	3/1000	Halpern
4,900,828	A	3/1990	naipen
4,906,991	А	3/1990	Fiala et al.
4.907.227	Α	3/1990	Unno
4,007,057	<u>,</u>	2/1000	A
4,907,257	A	3/1990	Asano et al.
4,908,850	А	3/1990	Masson et al.
4 910 672	Δ	3/1000	Off et al
4,010,072	-	3/1000	The an
4,912,648	А	3/1990	lyler
4.914.590	A	4/1990	Loatman et al.
4 0 16 600	Δ.	4/1000	Ohashi
4,910,099	A	4/1990	Ollasili
4,918,588	А	4/1990	Barrett et al.
4 922 521	Α	5/1990	Krikke et al
4 0 24 279		5/1000	II and an at al
4,924,378	A	5/1990	nersney et al.
4,924,408	А	5/1990	Highland
4 926 255	Δ	5/1000	Von Kohorn
4,920,233	<u></u>	5/1000	
4,931,928	Α	6/1990	Greenfeld
4.931.932	Α	6/1990	Dalnekoff et al.
4 021 022	Â.	6/1000	Chan at al
4,951,955	A	0/1990	Chen et al.
4,935,870	Α	6/1990	Burk, Jr. et al.
4 935 956	Α	6/1990	Hellwarth et al
4,025,062	~	6/1000	Accetion
4,935,962	А	6/1990	Austin
4,937,036	Α	6/1990	Beard et al.
4 937 863	Δ	6/1990	Robert et al
4,020,507		7/1000	
4,939,507	А	// 1990	Beard et al.
4,939,773	Α	7/1990	Katz
4 041 080	Δ	7/1000	Fischer
4,041,170	*	7/1000	
4,941,170	А	//1990	Herbst
4.941.175	Α	7/1990	Enescu et al.
4 043 006	Δ	7/1000	Baker Ir et al
4.047.020	4	0/1000	Carran
4,947,028	А	8/1990	Gorog
4.948.174	Α	8/1990	Thomson et al.
1 040 248	٨	8/1000	Caro
1,040,270	<u></u>	0/1000	
4,949,278	А	8/1990	Davies et al.
4.949.373	Α	8/1990	Baker, Jr. et al.
1 061 142	٨	10/1000	Elliott et al
4,901,142	A	10/1990	Elliou et al.
4,962,531	Α	10/1990	Sipman et al.
4.963.721	Α	10/1990	Kohno et al.
1 061 161	Â.	10/1000	Eist
+,204,104	A	10/1990	T IAL
4,967,273	Α	10/1990	Greenberg
4.968 873	Α	11/1990	Dethloff et al
4.070.001	<u>, ,</u>	11/1000	Dennett
4,970,681	Α	11/1990	Denneit
4,972.328	Α	11/1990	Wu et al.
4 972 462	Δ	11/1000	Danielson et al
4,072,501	7	11/1990	
4,972,504		11/1990	Daniel, Jr. et al.
	А	11,1990	
4,974 193	A	11/1990	Beutelspacher et al
4,974,193	A	11/1990	Beutelspacher et al.
4,974,193 4,974,878	A A A	11/1990 12/1990	Beutelspacher et al. Josephson
4,974,193 4,974,878 4,977,502	A A A A	11/1990 12/1990 12/1990	Beutelspacher et al. Josephson Baker et al.
4,974,193 4,974,878 4,977,502	A A A A	11/1990 12/1990 12/1990 12/1990	Beutelspacher et al. Josephson Baker et al.
4,974,193 4,974,878 4,977,502 4,977,595	A A A A A	11/1990 11/1990 12/1990 12/1990 12/1990	Beutelspacher et al. Josephson Baker et al. Ohta et al.
4,974,193 4,974,878 4,977,502 4,977,595 D313,401	A A A A S	11/1990 12/1990 12/1990 12/1990 12/1990 1/1991	Beutelspacher et al. Josephson Baker et al. Ohta et al. Tanabe
4,974,193 4,974,878 4,977,502 4,977,595 D313,401 4 982 346	A A A A S A	11/1990 12/1990 12/1990 12/1990 12/1990 1/1991	Beutelspacher et al. Josephson Baker et al. Ohta et al. Tanabe Girouard et al.

4,987,587 A	1/1991	Jolissaint
4,989,234 A	1/1991	Schakowski et al.
4,992,646 A	2/1991	Collin
4,992,940 A	2/1991	Dworkin
4,999,806 A	3/1991	Chernow et al.
5,003,584 A	3/1991	Benyacar et al.
5,003,595 A	3/1991	Collins et al.
5,007,084 A	4/1991	Materna et al.
5.010.240 A	4/1991	Sheldon
5.012.077 A	4/1991	Takano
5.016.274 A	5/1991	Micali et al.
5.017.766 A	5/1991	Tamada et al.
5,018,196 A	5/1991	Takaragi et al
5,010,190 M	5/1991	Chang et al
5,012,020 A	6/1001	Kaplan et al
5,023,904 A	6/1001	Johnson et al
5,025,907 A	6/1001	Burton et al
5,025,572 A	6/1991	Kanagar Ir at al
5,025,575 A	0/1991	Cellin
5,030,800 A	7/1991	
5,034,807 A	//1991	von Konorn
5,043,871 A	8/1991	Nishigaki et al.
5,053,607 A	10/1991	Carlson et al.
5,057,915 A	10/1991	Von Kohorn
5,058,056 A	10/1991	Hammer et al.
5,060,153 A	10/1991	Nakagawa
5,063,523 A	11/1991	Vrenjak
5,077,607 A	12/1991	Johnson et al.
5,091,849 A	2/1992	Davis et al.
5,103,476 A	4/1992	Waite et al.
5,103,498 A	4/1992	Lanier et al.
5,114,128 A	5/1992	Harris, Jr. et al.
D327,472 S	6/1992	Martin
D327,877 S	7/1992	Martin
5.128.524 A	7/1992	Anglin et al.
5.128.752 A	7/1992	Von Kohorn
5.128.985 A	7/1992	Yoshida et al.
5 133 045 A	7/1992	Gaither et al
5 136 146 A	8/1992	Anglin et al
5,120,712	0 1772	mgnin ot ai.
	8/1002	Corbin
5,138,712 A 5,146,857 A	8/1992	Corbin Spliethoff et al
5,138,712 A 5,146,857 A 5,148,474 A	8/1992 9/1992 9/1992	Corbin Spliethoff et al.
5,138,712 A 5,146,857 A 5,148,474 A 5,155,501 A	8/1992 9/1992 9/1992	Corbin Spliethoff et al. Haralambopoulos et al. Wachob
5,138,712 A 5,146,857 A 5,148,474 A 5,155,591 A	8/1992 9/1992 9/1992 10/1992	Corbin Spliethoff et al. Haralambopoulos et al. Wachob
5,138,712 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A	8/1992 9/1992 9/1992 10/1992 11/1992	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al.
5,138,712 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A	8/1992 9/1992 10/1992 11/1992 11/1992 11/1992	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al.
5,158,712 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,981 A 5,164,981 A	8/1992 9/1992 10/1992 11/1992 11/1992 11/1992	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al.
5,138,712 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,981 A 5,165,011 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 11/1992	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano
5,138,712 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,981 A 5,165,011 A 5,168,275 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 11/1992 12/1992	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al.
5,138,712 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,576 A 5,165,011 A 5,168,275 A 5,173,238 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 11/1992 12/1992 12/1992	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al.
5,138,712 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,981 A 5,168,275 A 5,168,275 A 5,173,238 A 5,173,597 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin
5,138,712 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,981 A 5,165,011 A 5,165,011 A 5,165,011 A 5,173,238 A 5,173,597 A 5,173,936 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al.
5,138,712 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,981 A 5,165,011 A 5,165,011 A 5,165,275 A 5,173,238 A 5,173,597 A 5,173,936 A 5,175,416 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al.
5,138,712 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,165,011 A 5,168,275 A 5,173,238 A 5,173,397 A 5,173,936 A 5,175,416 A 5,175,423 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan
5,138,712 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,981 A 5,168,275 A 5,173,238 A 5,173,238 A 5,173,396 A 5,175,416 A 5,175,423 A 5,175,682 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al.
5,138,712 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,981 A 5,168,275 A 5,168,275 A 5,173,238 A 5,173,597 A 5,173,936 A 5,175,412 A 5,175,412 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al.
5,138,712 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,981 A 5,165,011 A 5,168,275 A 5,173,238 A 5,173,238 A 5,173,597 A 5,173,936 A 5,175,416 A 5,175,423 A 5,175,682 A 5,180,905 A 5,181,238 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,576 A 5,164,981 A 5,165,011 A 5,168,275 A 5,173,238 A 5,173,936 A 5,175,416 A 5,175,423 A 5,175,682 A 5,180,905 A 5,181,238 A 5,183,135 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 2/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,166,981 A 5,165,011 A 5,168,275 A 5,173,238 A 5,173,597 A 5,173,936 A 5,175,416 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,180,905 A 5,181,238 A 5,183,135 A 5,187,710 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 1/1993 2/1993 2/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,981 A 5,165,011 A 5,168,275 A 5,173,238 A 5,173,597 A 5,173,416 A 5,175,416 A 5,175,423 A 5,175,682 A 5,175,682 A 5,175,682 A 5,180,905 A 5,181,238 A 5,183,135 A 5,187,710 A D333,658 S	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 1/1993 2/1993 3/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al. Sasaki
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,981 A 5,168,275 A 5,168,275 A 5,173,238 A 5,173,597 A 5,173,597 A 5,173,682 A 5,175,416 A 5,175,412 A 5,175,423 A 5,183,135 A 5,183,135 A 5,183,135 A 5,183,145 A 5,183,145 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 2/1993 3/1993 3/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al. Sasaki McCalley et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,576 A 5,164,981 A 5,165,011 A 5,168,275 A 5,173,238 A 5,173,597 A 5,173,936 A 5,175,416 A 5,175,423 A 5,175,416 A 5,175,682 A 5,180,905 A 5,181,238 A 5,183,135 A 5,187,710 A D333,658 S 5,191,410 A D334,924 S	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 1/1993 3/1993 3/1993 4/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Sasaki McCalley et al. Crawford et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,166,981 A 5,165,011 A 5,168,275 A 5,173,238 A 5,173,936 A 5,175,416 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,180,905 A 5,181,238 A 5,183,135 A 5,187,710 A D333,658 S 5,191,410 A D334,924 S 5,201,010 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 2/1993 3/1993 3/1993 4/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,576 A 5,164,981 A 5,165,011 A 5,168,275 A 5,173,238 A 5,173,238 A 5,173,416 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 S 5,191,410 A D333,658 S 5,201,010 A 5,204,897 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 1/1993 3/1993 3/1993 4/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al. Sasaki McCalley et al. Deaton et al. Deaton et al. Wyman
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,981 A 5,165,011 A 5,168,275 A 5,173,238 A 5,173,238 A 5,173,597 A 5,173,416 A 5,175,416 A 5,175,423 A 5,175,423 A 5,175,682 A 5,175,682 A 5,183,135 A 5,204,897 A 5,204,893 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 2/1993 3/1993 3/1993 4/1993 4/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Wyman Yamazaki et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,576 A 5,164,576 A 5,163,275 A 5,173,238 A 5,173,238 A 5,173,597 A 5,173,936 A 5,175,416 A 5,175,416 A 5,175,416 A 5,175,423 A 5,175,416 A 5,175,423 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,191,410 A D334,924 S 5,201,010 A 5,204,937 A 5,204,947 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 2/1993 2/1993 3/1993 3/1993 4/1993 4/1993 4/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Deaton et al. Bernstein et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,576 A 5,163,275 A 5,173,238 A 5,173,238 A 5,173,936 A 5,175,416 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,181,238 A 5,183,135 A 5,181,710 A D333,658 S 5,191,410 A D333,624 S 5,204,939 A 5,204,939 A 5,204,947 A 5,204,947 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 3/1993 3/1993 3/1993 4/1993 4/1993 4/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Wyman Yamazaki et al. Bernstein et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,165,591 A 5,164,576 A 5,164,576 A 5,163,275 A 5,173,238 A 5,173,238 A 5,173,597 A 5,173,936 A 5,175,416 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,181,238 A 5,181,238 A 5,183,135 A 5,183,135 A 5,183,135 A 5,183,135 A 5,183,135 A 5,191,410 A D333,658 S 5,201,010 A 5,204,937 A 5,204,947 A 5,206,899 A 5,207,294 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 3/1993 3/1993 4/1993 4/1993 4/1993 4/1993 4/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Wyman Yamazaki et al. Bernstein et al. Gupta et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,981 A 5,168,275 A 5,173,238 A 5,173,238 A 5,173,597 A 5,173,396 A 5,175,416 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,682 A 5,183,135 A 5,183,135 A 5,183,135 A 5,187,710 A D333,658 S 5,191,410 A D333,658 S 5,201,010 A 5,204,897 A 5,204,897 A 5,204,939 A 5,207,294 A 5,207,294 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 2/1993 3/1993 4/1993 4/1993 4/1993 4/1993 5/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al. Sasaki McCalley et al. Deaton et al. Deaton et al. Bernstein et al. Gupta et al. Kurimoto et al. Jeffus et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,981 A 5,165,011 A 5,168,275 A 5,173,238 A 5,173,238 A 5,173,597 A 5,173,416 A 5,175,416 A 5,175,412 A 5,175,413 A 5,175,413 A 5,175,413 A 5,175,413 A 5,175,413 A 5,175,413 A 5,175,413 A 5,175,413 A 5,183,135 A 5,183,135 A 5,183,135 A 5,183,135 A 5,183,135 A 5,183,135 A 5,204,907 A 5,204,939 A 5,204,939 A 5,204,939 A 5,204,947 A 5,206,899 A 5,201,078 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 2/1993 3/1993 3/1993 4/1993 4/1993 4/1993 4/1993 5/1993 5/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Chan et al. Medamana et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Bernstein et al. Gupta et al. Kurimoto et al. Gupta et al. Surimoto et al. Bernstein et al. Gupta et al. Bunnseard
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,576 A 5,164,981 A 5,165,011 A 5,168,275 A 5,173,238 A 5,173,936 A 5,173,936 A 5,175,416 A 5,175,423 A 5,175,423 A 5,175,682 A 5,175,423 A 5,175,682 A 5,183,135 A 5,181,238 A 5,183,135 A 5,181,710 A D333,658 S 5,191,410 A D333,628 S 5,201,010 A 5,204,939 A 5,204,939 A 5,207,294 A 5,210,789 A 5,210,794 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 2/1993 3/1993 3/1993 4/1993 4/1993 4/1993 4/1993 5/1993 5/1993 5/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Bernstein et al. Gupta et al. Kurimoto et al. Jeffus et al. Brunsgard Zlam et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,165,591 A 5,164,576 A 5,163,275 A 5,173,238 A 5,173,238 A 5,173,936 A 5,173,416 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,180,905 A 5,181,238 A 5,183,135 A 5,187,710 A D333,658 S 5,191,410 A D333,658 S 5,201,010 A 5,204,937 A 5,204,937 A 5,204,939 A 5,206,899 A 5,207,294 A 5,210,789 A 5,214,608 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 1/1993 3/1993 3/1993 3/1993 4/1993 4/1993 4/1993 4/1993 5/1993 5/1993 5/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Wyman Yamazaki et al. Bernstein et al. Gupta et al. Surimoto et al. Jeffus et al. Brunsgard Zlam et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,576 A 5,163,275 A 5,173,238 A 5,173,238 A 5,173,238 A 5,173,416 A 5,175,423 A 5,180,905 A 5,180,905 A 5,180,905 A 5,204,907 A 5,204,939 A 5,204,937 A 5,204,938 A 5,204,937 A 5,204,938 A 5,204,937 A 5,204,937 A 5,204,938 A 5,204,948 A 5,204	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 3/1993 3/1993 3/1993 4/1993 4/1993 4/1993 4/1993 5/1993 5/1993 5/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al. Sasaki McCalley et al. Deaton et al. Deaton et al. Wyman Yamazaki et al. Bernstein et al. Gupta et al. Surimoto et al. Jeffus et al. Brunsgard Zlam et al. Pinkas et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,981 A 5,168,275 A 5,173,238 A 5,173,238 A 5,173,597 A 5,173,416 A 5,175,413 A 5,175,413 A 5,175,423 A 5,175,423 A 5,175,682 A 5,175,682 A 5,183,135 A 5,183,135 A 5,183,135 A 5,183,135 A 5,181,238 A 5,183,135 A 5,187,710 A D333,658 S 5,191,410 A D333,658 S 5,201,010 A 5,204,897 A 5,204,939 A 5,204,939 A 5,204,939 A 5,207,294 A 5,207,294 A 5,210,789 A 5,210,789 A 5,214,688 A 5,214,700 A 5,218,632 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 2/1993 3/1993 4/1993 4/1993 4/1993 4/1993 4/1993 5/1993 5/1993 5/1993 5/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Chen et al. Medamana et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Bernstein et al. Gupta et al. Surman Yamazaki et al. Brunsgard Zlam et al. Pinkas et al. Cool
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,981 A 5,165,011 A 5,168,275 A 5,173,238 A 5,173,238 A 5,173,936 A 5,175,416 A 5,175,416 A 5,175,423 A 5,175,423 A 5,175,416 A 5,175,423 A 5,175,416 A 5,175,423 A 5,183,135 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,191,410 A D333,658 S 5,191,410 A 5,204,897 A 5,204,939 A 5,204,939 A 5,204,947 A 5,206,899 A 5,207,294 A 5,210,784 A 5,210,784 A 5,214,688 A 5,214,700 A 5,220,501 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 2/1993 3/1993 3/1993 4/1993 4/1993 4/1993 4/1993 5/1993 5/1993 5/1993 5/1993 6/1993 6/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Chen et al. Medamana et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Bernstein et al. Gupta et al. Gupta et al. Sturimoto et al. Jeffus et al. Brunsgard Zlam et al. Pinkas et al. Cool Lawlor et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,165,591 A 5,165,011 A 5,165,011 A 5,168,275 A 5,173,238 A 5,173,238 A 5,173,416 A 5,175,423 A 5,180,905 A 5,181,238 A 5,181,238 A 5,183,135 A 5,187,710 A D333,658 S 5,191,410 A 5,204,939 A 5,204,939 A 5,204,939 A 5,204,939 A 5,207,294 A 5,210,789 A 5,210,784 A 5,214,688 A 5,220,501 A 5,220,501 A 5,220,503 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 1/1993 3/1993 3/1993 3/1993 4/1993 4/1993 4/1993 4/1993 5/1993 5/1993 5/1993 5/1993 5/1993 5/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Chen et al. Medamana et al. Chen et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Bernstein et al. Bernstein et al. Gupta et al. Brunsgard Zlam et al. Pinkas et al. Cool Lawlor et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,165,591 A 5,164,576 A 5,164,576 A 5,163,275 A 5,173,238 A 5,173,597 A 5,173,936 A 5,175,416 A 5,175,423 A 5,181,238 A 5,181,238 A 5,181,238 A 5,201,010 A 5,204,937 A 5,204,947 A 5,204,947 A 5,204,947 A 5,204,947 A 5,204,947 A 5,204,947 A 5,204,947 A 5,204,947 A 5,204,947 A 5,207,294 A 5,210,789 A 5,210,789 A 5,210,789 A 5,210,794 A 5,210,794 A 5,214,688 A 5,214,688 A 5,220,501 A 5,220,501 A 5,220,503 A 5,221,838 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 3/1993 3/1993 3/1993 4/1993 4/1993 4/1993 4/1993 4/1993 5/1993 5/1993 5/1993 5/1993 5/1993 6/1993 6/1993 6/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Wyman Yamazaki et al. Bernstein et al. Gupta et al. Brunsgard Zlam et al. Pinkas et al. Cool Lawlor et al. Zicker et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,165,76 A 5,164,576 A 5,164,576 A 5,163,275 A 5,173,238 A 5,173,238 A 5,173,237 A 5,173,238 A 5,173,416 A 5,175,413 A 5,175,413 A 5,175,413 A 5,175,413 A 5,175,413 A 5,175,413 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,182,135 A 5,180,905 A 5,181,238 A 5,180,905 A 5,181,238 A 5,201,010 A 5,204,939 A 5,204,939 A 5,204,947 A 5,204,947 A 5,206,899 A 5,207,294 A 5,207,294 A 5,207,294 A 5,210,789 A 5,210,789 A 5,210,794 A 5,214,700 A 5,220,501 A 5,220,503 A 5,222,134 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 2/1993 3/1993 4/1993 4/1993 4/1993 4/1993 4/1993 5/1993 5/1993 5/1993 5/1993 6/1993 6/1993 6/1993 6/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Kurimoto et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Bernstein et al. Buyman Yamazaki et al. Bernstein et al. Gupta et al. Brunsgard Zlam et al. Cool Lawlor et al. Gutman et al. Cool Lawlor et al. Gutman et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,576 A 5,164,576 A 5,163,275 A 5,173,238 A 5,173,238 A 5,173,936 A 5,173,936 A 5,175,416 A 5,175,416 A 5,175,416 A 5,175,416 A 5,175,416 A 5,175,416 A 5,175,416 A 5,175,416 A 5,183,135 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,191,410 A D333,658 S 5,191,410 A D334,924 S 5,201,010 A 5,204,897 A 5,204,939 A 5,207,294 A 5,207,294 A 5,210,789 A 5,210,794 A 5,214,688 A 5,214,700 A 5,220,593 A 5,222,134 A 5,223,699 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 2/1993 3/1993 3/1993 4/1993 4/1993 4/1993 4/1993 5/1993 5/1993 5/1993 5/1993 6/1993 6/1993 6/1993 6/1993 6/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Chen et al. Medamana et al. Chau et al. Basaki McCalley et al. Crawford et al. Deaton et al. Bernstein et al. Gupta et al. Brunsgard Zlam et al. Pinkas et al. Cool Lawlor et al. Gutman et al. Gutman et al. Waite et al. Hynn et al.
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,164,576 A 5,164,576 A 5,163,275 A 5,173,238 A 5,173,238 A 5,173,936 A 5,173,936 A 5,175,416 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,183,135 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,191,410 A 5,204,939 A 5,204,939 A 5,204,939 A 5,207,294 A 5,210,789 A 5,210,789 A 5,210,794 A 5,214,688 A 5,220,501 A 5,220,593 A 5,222,134 A 5,223,699 A 5,224,164 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 3/1993 3/1993 3/1993 3/1993 4/1993 4/1993 4/1993 4/1993 5/1993 5/1993 5/1993 5/1993 5/1993 6/1993 6/1993 6/1993 6/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Chen et al. Medamana et al. Chen et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Bernstein et al. Guyta et al. Bernstein et al. Guyta et al. Brunsgard Zlam et al. Pinkas et al. Ccol Lawlor et al. Zicker et al. Gutta et al. Brunsgard Zlam et al. Zicker et al. Gutta et al. Flynn et al. Flynn et al. Elsner
5,138,/12 A 5,146,857 A 5,148,474 A 5,155,591 A 5,161,214 A 5,165,591 A 5,164,576 A 5,164,576 A 5,163,275 A 5,173,238 A 5,173,238 A 5,173,936 A 5,175,416 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,175,423 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,181,238 A 5,183,135 A 5,181,238 A 5,201,010 A 5,204,939 A 5,204,939 A 5,204,947 A 5,206,899 A 5,207,294 A 5,210,789 A 5,210,789 A 5,210,789 A 5,210,794 A 5,214,688 A 5,220,501 A 5,222,134 A 5,222,134 A 5,222,164 A 5,222,164 A	8/1992 9/1992 9/1992 10/1992 11/1992 11/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1992 12/1993 1/1993 1/1993 3/1993 3/1993 4/1993 4/1993 4/1993 4/1993 5/1993 5/1993 5/1993 5/1993 6/1993 6/1993 6/1993 6/1993 6/1993 6/1993	Corbin Spliethoff et al. Haralambopoulos et al. Wachob Addink et al. Anglin et al. Mitchell et al. Hisano Harrison et al. Chang et al. Anglin Ditzig et al. Mansvelt et al. Kayan Higashiyama et al. Chen et al. Medamana et al. Chen et al. Medamana et al. Chau et al. Sasaki McCalley et al. Crawford et al. Deaton et al. Wyman Yamazaki et al. Bernstein et al. Gupta et al. Brunsgard Zlam et al. Pinkas et al. Cool Lawlor et al. Zicker et al. Gutman et al. Waite et al. Sicker et al. Aurimoto et al. Pinkas et al. Cool Lawlor et al. Zicker et al. Gutman et al. Hynn et al. Elsner Amarena et al.

(56) **References** Cited

5.229.894 A	7/1993	Collins et al.
5,225,651 11	7/1002	Maratta et al
3,231,309 A	// 1993	Myatt et al.
D338,876 S	8/1993	Nair et al.
5 235 642 A	8/1003	Wobber et al
5,235,042 1	0/1003	
5,237,159 A	8/1993	Stephens et al.
5.237.499 A	8/1993	Garback
5 241 671 4	8/1003	Pood at al
5,241,071 A	0/1993	Reeu et al.
5,245,656 A	9/1993	Loeb et al.
5 247 347 A	9/1993	Litteral et al
5,217,317 14	0/1002	Lincolar et al.
5,247,357 A	9/1993	Israelsen
5.247.575 A	9/1993	Sprague et al.
5 240 203 1	0/1003	Schreiber et al
5,249,295 A	3/1333	Semender et al.
D340,067 S	10/1993	Arakaki et al.
5.253.165 A	10/1993	Leiseca et al.
5 254 842 4	10/1002	Ham an at al
5,254,845 A	10/1995	Hylles et al.
5,255,309 A	10/1993	Katz
5 256 867 A	10/1003	Chen
5,250,807 A	10/1993	Chen NV
5,260,999 A	11/1993	wyman
5.261.002 A	11/1993	Perlman et al.
5 262 164 A	11/1002	Kannady at al
3,203,104 A	11/1993	Kaillauy et al.
5,265,065 A	11/1993	Turtle
5.266.789 A	11/1993	Anglin et al.
5 267 214 4	11/1002	Stamblan
3,207,314 A	11/1993	Stamolei
5.267.334 A	11/1993	Normille et al.
5 267 351 A	11/1003	Reber et al
5,207,551 1	10/1000	
5,270,921 A	12/1993	Hornick
5.274.824 A	12/1993	Howarth
D242 412 S	1/1004	A reliation of al
D343,413 S	1/1994	Alakaki et al.
5,276,444 A	1/1994	McNair
5 276 829 A	1/1994	Sano
5 292 721	2/1004	T allowed a set all
5,285,731 A	2/1994	Lalonde et al.
5.283.734 A	2/1994	Von Kohorn
5 283 820 1	2/1004	Anderson
5,205,025 A	2/1004	Anderson
5,283,856 A	2/1994	Gross et al.
5.287.181 A	2/1994	Holman
5 297 402 4	2/1004	Atlaing at al
3,287,403 A	2/1994	Atkins et al.
5,287,407 A	2/1994	Holmes
5 291 003 A	3/1994	Avnet et al
5,291,005 A	3/1004	Finer et al.
5,291,543 A	3/1994	Freese et al.
5.297.189 A	3/1994	Chabernaud
5 207 107 A	3/100/	Katz
3,297,197 A	3/1994	Kaiz
5,297,249 A	3/1994	Bernstein et al.
5.305.195 A	4/1994	Murphy
5 207 456 A	4/1004	Maakay
5,507,450 A	4/1994	MacKay
D346,794 S	5/1994	Arakaki et al.
5 309 437 A	5/1994	Perlman et al
5,309,157 11	5/1004	Managements's
5,309,504 A	5/1994	Morganstein
5,311,594 A	5/1994	Penzias
5 311 505 A	5/1004	Bierrum et al
5,511,555 11	5/1004	G 11
5,317,507 A	5/1994	Gallant
D347.828 S	6/1994	Arakaki et al.
5 3 21 243 A	6/1004	Groves et al
5,521,245 A	6/1004	Silves et al.
5,321,750 A	6/1994	Nadan
5.321.751 A	6/1994	Rav et al.
5 321 833 4	6/1004	Chang et al
5,521,655 A	6/1004	Chang et al.
5,324,922 A	6/1994	Roberts
5.325.298 A	6/1994	Gallant
5 3 25 3 62 A	6/1004	Aziz
5,525,502 A	0/1994	AZIZ
D348,440 S	7/1994	Nair et al.
5.331.546 A	7/1994	Webber et al.
5 222 181 A	7/1004	Diggs
5,555,181 A	7/1994	Diggs
5,333,186 A	7/1994	Gupta
5.334.823 A	8/1994	Noblett. Jr. et al
5,351,025 A	0/1004	Dishandaar I 1
5,555,200 A	8/1994	Kichardson, Jr. et al.
5,336,870 A	8/1994	Hughes et al.
5 336 871 4	8/100/	Coloate Ir
5,550,071 A	0/1004	Character 1
5,557,557 A	8/1994	Cnou et al.
5.337.360 A	8/1994	Fischer
5 330 352 1	8/100/	Armstrong et al
5,557,552 A	0/1224	
5,341,414 A	8/1994	Popke
5 341 429 4	8/1004	Stringer et al
5,571,747 A	0/1224	Sumger et al.
5,341,478 A	8/1994	Travis, Jr. et al.
5.343.529 A	8/1994	Goldfine et al
5,5 15,525 IL	0/1007	Tiludala -1-1
5, <i>5</i> 45,090 A	9/1994	Hludzinski
5,347,576 A	9/1994	Taylor
, ,		

5,347,632 A	9/1994	Filepp et al.
5,349,642 A	9/1994	Kingdon
5,351,186 A	9/1994	Bullock et al.
5,351,293 A	9/1994	Michener et al.
5,353,283 A	10/1994	Tsuchiya
5,355,403 A	10/1994	Richardson, Jr. et al.
5,357,303 A	10/1994	Hamilton et al.
5,557,504 A	10/1994	Gupta et al.
5,502,952 A	11/1994	Nall et al. Bird et al
5,309,703 A	12/100/	Diffic et al
5 373 550 A	12/1994	Campbell et al
5.375.240 A	12/1994	Grundy
5.377.103 A	12/1994	Lamberti et al.
5,379,037 A	1/1995	Harrison et al.
5,381,242 A	1/1995	Fujii
5,381,467 A	1/1995	Rosinski et al.
5,383,113 A	1/1995	Kight et al.
5,384,831 A	1/1995	Creswell et al.
5,386,458 A	1/1995	Nair et al.
D355,437 S	2/1995	Reph
5,390,297 A	2/1995	Barber et al.
5,594,405 A	2/1995	A rokolci et al.
5 308 300 A	3/1995	Alakaki et al.
5,398,300 A	3/1995 4/1005	Bloomfiled
5 404 506 A	4/1995	Fujisawa et al
5.404.508 A	4/1995	Konrad et al.
5.408.519 A	4/1995	Pierce et al.
5,410,343 A	4/1995	Coddinggton et al.
5,410,602 A	4/1995	Finkelstein et al.
5,412,804 A	5/1995	Krishna
5,414,833 A	5/1995	Hershey et al.
5,420,405 A	5/1995	Chasek
5,420,926 A	5/1995	Low et al.
5,420,927 A	5/1995	Micali
5,421,008 A	5/1995	Banning et al.
D359,490 S	6/1995	Arakaki et al.
5,425,080 A	6/1005	Addie Nair et al
5,420,280 A	6/1995	Nair et al
5.428.709 A	6/1995	Banzhaf
5.428.745 A	6/1995	de Bruijn et al.
5,428,791 A	6/1995	Andrew et al.
D359,951 S	7/1995	Nair et al.
5,432,326 A	7/1995	Noblett, Jr. et al.
5,432,329 A	7/1995	Colgate, Jr. et al.
5,434,400 A	7/1995	Scherzer
5,434,404 A	7/1995	Liu et al.
5,454,918 A	2/1005	Rung et al.
5 438 355 A	8/1995	Palmer
5 438 356 A	8/1995	Ushiki et al
5.438.508 A	8/1995	Wyman
5,438,615 A	8/1995	Moen
5,440,108 A	8/1995	Tran et al.
5,440,621 A	8/1995	Castro
5,440,634 A	8/1995	Jones et al.
5,442,342 A	8/1995	Kung
5,442,688 A	8/1995	Katz
5,442,771 A	8/1995	Filepp et al.
5,442,778 A	8/1995	Pedersen et al.
5,444,794 A	8/1995	Unland, Sr.
5,440,885 A	0/1995 9/1005	Willing
5 448 045 A	0/1005	Clark
5.448.727 A	9/1995	Annevelink
5.450.477 A	9/1995	Amarant et al.
5,452,348 A	9/1995	Adams et al.
5,452,352 A	9/1995	Talton
5,452,447 A	9/1995	Nelson et al.
5,452,448 A	9/1995	Sakuraba et al.
5 453 601 A	212220	
5,455,001 11	9/1995	Rosen
5,455,407 A	9/1995 10/1995	Rosen Rosen
5,455,407 A 5,455,903 A	9/1995 10/1995 10/1995	Rosen Rosen Jolissaint et al.
5,455,407 A 5,455,903 A 5,455,953 A	9/1995 10/1995 10/1995 10/1995 10/1995	Rosen Rosen Jolissaint et al. Russell
5,455,903 A 5,455,903 A 5,455,953 A 5,457,680 A	9/1995 10/1995 10/1995 10/1995 10/1995	Rosen Rosen Jolissaint et al. Russell Kamm et al.
5,455,407 A 5,455,903 A 5,455,953 A 5,457,680 A 5,457,746 A	9/1995 10/1995 10/1995 10/1995 10/1995 10/1995	Rosen Rosen Jolissaint et al. Russell Kamm et al. Dolphin

References Cited (56)

D364.391	S		11/1995	Drugge
5 465 206	Δ	*	11/1995	Hilt et al $705/40$
5 465 200	A		11/1005	Hampton at al
5,465,290	<u>л</u>		11/1995	Pormus et al.
5,405,291	A		11/1993	Barrus et al.
5,465,293	A		11/1995	Chiller et al.
5,466,918	Α		11/1995	Ray et al.
5,466,920	А		11/1995	Nair et al.
5,467,269	Α		11/1995	Flaten
5,469,491	А		11/1995	Morley, Jr. et al.
5 475 740	Δ		12/1995	Biggs Ir et al
5 475 747	~		12/1995	Diggs, Ji. et al.
5,475,747	A		12/1993	Dales et al.
5,476,259	А		12/1995	Weingardt
5,477,040	А		12/1995	Lalonde
5,478,993	А		12/1995	Derksen
5.479.510	Α		12/1995	Olsen et al.
5 481 600	Α		1/1996	Alessio
5 483 444	Δ		1/1006	Heintzeman et al
5 102 652	~		1/1006	Sudama at al
5,485,052	A		1/1990	Sudalila et al.
5,485,370	A		1/1996	Moss et al.
5,485,510	А		1/1996	Colbert
5,487,103	А		1/1996	Richardson, Jr. et al.
5,488,725	Α		1/1996	Turtle et al.
D367 044	S		2/1996	Arakaki
5 401 752	Ă		2/1006	Kaufman et al
5 401 820	<u>л</u>		2/1990	Rauman et al.
5,491,820	A	1 2-	2/1990	
5,495,521	А	str.	2/1996	Rangachar 379/93.04
5,497,458	А		3/1996	Finch et al.
5,500,681	А		3/1996	Jones
5.500.929	А		3/1996	Dickinson
5 502 636	Α		3/1996	Clarke
5,502,050	Â		3/1006	Chang at al
5,502,759	A .		2/1006	Andress et al.
5,502,762	A		3/1990	Andrew et al.
5,504,677	Α	r	4/1996	Pollin
5,504,890	А		4/1996	Sanford
5,506,393	Α		4/1996	Ziarno
5.506.887	А		4/1996	Emerv et al.
5 509 055	A		4/1996	Ehrlich et al
5,509,000	A		4/1006	Pile et al
5,510,777	<u>л</u>		4/1006	The et al.
5,511,180	A		4/1996	Schleve
5,513,344	A		4/1996	Nakamura
5,515,098	А		5/1996	Carles
5,522,087	А		5/1996	Hsiang
5.524.142	Α		6/1996	Lewis et al.
5.524.145	А		6/1996	Parker
5 524 208	Ā		6/1996	Finch et al
5 530 852	Å		6/1006	Maska Ir at al
5,550,852	A		6/1006	Nieske, JI. et al.
3,330,833	A		0/1990	Saton et al.
5,535,276	A		7/1996	Ganesan
5,535,382	А		7/1996	Ogawa
5,537,464	А		7/1996	Lewis et al.
5,537,470	Α		7/1996	Lee
5,537,546	А		7/1996	Sauter
D372 492	S		8/1996	Stanton
D372,492	ç		8/1006	Sacaki
5 544 220	3		0/1990	Vannad
5,544,520	A		8/1990	Konrad
5,544,322	A		8/1996	Cheng et al.
5,546,523	А		8/1996	Gatto
5,546,583	А		8/1996	Shriver
5,548,760	Α		8/1996	Healey
5 550 984	Δ		8/1996	Gelb
5,551,030	Å		8/1006	Linden et al
5,551,050	7		0/1006	Linden et al.
5,555,239	A		9/1996	Heath et al.
5,555,309	А		9/1996	Kruys
5,555,346	А		9/1996	Gross et al.
5,555,551	А	*	9/1996	Rudokas et al 455/410
5.557.518	Α		9/1996	Rosen
5.557.730	Ā		9/1996	Frid-Nielsen
5 557 736	Å		0/1006	Hirosawa et al
5,551,150	A		5/1990 0/100C	De porre et el
3,331,141	A		9/1990	Rogers et al.
5,559,887	А		9/1996	Davis et al.
5,559,925	А		9/1996	Austin
5,560.008	А		9/1996	Johnson et al.
5,561 707	Δ		10/1996	Katz
5 566 724	Å		10/1006	Reed et al
5,500,234	A		10/1990	
5,500,302	А		10/1996	Knalidi et al.

5,570,283 A	10/1996	Shoolery et al.
5,572,643 A	11/1996	Judson
5,572,677 A 5,574,785 A	11/1996	Luther et al.
5.577.118 A	11/1996	Sasaki et al.
5,577,121 A	11/1996	Davis et al.
5,577,197 A	11/1996	Beck
5,577,209 A	11/1996	Boyle et al.
5,577,241 A	11/1996	Spencer Hamilton et al
5.581.522 A	12/1996	Sibuva et al
5,581,764 A	12/1996	Fitzgerald et al.
5,583,563 A	12/1996	Wanderscheid et al.
5,583,759 A	12/1996	Geer
5,583,996 A	12/1996	Tsuchiya Vomogualii at al
5,586,260 A	12/1990	Hu
5,590,038 A	12/1996	Pitroda
5,590,197 A	12/1996	Chen et al.
5,594,226 A	1/1997	Steger
5,596,642 A	1/1997	Davis et al.
5,590,043 A	2/1997	Chen et al
5,604,801 A	2/1997	Dolan et al.
5,604,802 A	2/1997	Holloway
5,613,783 A	3/1997	Kinney et al.
5,617,474 A	4/1997	Ditzig et al.
5,619,709 A	4/1997	Caid et al.
5.623.547 A	4/1997	Jones et al.
5,623,600 A	4/1997	Ji et al.
5,623,652 A	4/1997	Vora et al.
D379,195 S	5/1997	Stanton
5,627,892 A	5/1997	Kauffman
5,035,919 A	5/1997	Davis et al
5.634.729 A	6/1997	Kinnev et al.
5,640,564 A	6/1997	Hamilton et al.
5,641,050 A	6/1997	Smith et al.
5,642,419 A	6/1997	Rosen
5,651,101 A	7/1997	Gotoh et al.
5,657,390 A	8/1997	Elgamal et al
5,659,165 A	8/1997	Jennings et al.
5,664,190 A	9/1997	Cohen et al.
5,668,995 A	9/1997	Bhat
5,671,279 A	9/1997	Elgamal
5,071,555 A	9/1997	Nicolet
5,673,322 A	9/1997	Pepe et al.
5,678,041 A	10/1997	Baker et al.
5,679,938 A	10/1997	Templeton et al.
5,679,940 A	10/1997	Templeton et al.
5,080,552 A 5,682,475 A	10/1997	Iohnson et al
5.682.523 A	10/1997	Chen et al.
D386,781 S	11/1997	Sasaki
D386,782 S	11/1997	Sasaki
5,687,323 A	11/1997	Hodroff
5,691,526 A	11/1997	Evans Johnson et al
5,696,898 A	12/1997	Baker et al
5,696,909 A	12/1997	Wallner
5,701,466 A	12/1997	Yong et al.
5,703,344 A	12/1997	Bezy et al.
5,704,046 A	12/1997	Hogan Dalatia at al
5,706,211 A	1/1998	Belefic et al.
5,708.780 A	1/1998	Levergood et al.
5,708,825 A	1/1998	Sotomayor
5,710,719 A	1/1998	Houle
5,710,887 A	1/1998	Chelliah et al.
5,715,314 A	2/1998	Payne et al.
5,715,399 A	2/1998	Bezos
5,717,745 A	2/1998	Vijay et al.
5,719,928 A	2/1998	rinnell et al.
5.721.832 A	2/1998	Westrope et al
5,724.242 A	3/1998	Moore-McKee et al
,· = ·, = · = ·•		

(56) **References** Cited

5,724,424	A	- 275	- A / I O O O	0100 1 80 5/80
	× *		3/1998	Gifford 705/79
5 724 595	Α		3/1998	Gentner
5,721,555			2/1000	
5,727,156	А		3/1998	Herr-Hoyman et al.
5.727.159	А		3/1998	Kikinis
5 707 162	Â.		2/1009	Damas
5,727,105	А		5/1990	Dezos
5,727,249	Α	¥.	3/1998	Pollin 705/40
5 740 425	٨		4/1008	Dovilue
5,740,425	A		4/1990	TOVIIUS
5,742,674	Α		4/1998	Jain et al.
5 744 787	۸		4/1008	Taichar
5,744,787	A		4/1990	Telefiel
5,745,556	А		4/1998	Ronen
5 745 654	Α		4/1008	Titon
5,745,054	11		4/1990	Inali
5,745,681	Α		4/1998	Levine et al.
5 745 880	Λ		1/1008	Strothmann
5,745,880	<u>.</u>		T/1550	Subulinalin G. 12
5,748,780	А		5/1998	Stolfo
5 748 973	Δ		5/1008	Palmer et al
5,710,975	<u>.</u>		5/1000	
5,749,079	А		5/1998	Yong et al.
5 751 914	Α		5/1998	Colev et al
5 754 656			5/1000	Ni-1 -1
5,/54,050	А		5/1998	Nishioka et al.
5.757.669	Α		5/1998	Christie et al.
5 757 017			E/1009	Dana at al
5,/5/,91/	А		5/1998	Rose et al.
5.757.925	А		5/1998	Favbishenko
5 758 020	•		5/1008	Hall
5,758,029	А		5/1990	пан
5.758.327	A		5/1998	Gardner et al.
5 760 771	A		6/1008	Plandar at al
5,700,771	А		0/1998	biolider et al.
5.761.649	Α		6/1998	Hill
5 764 780			6/1009	Dana In stal
5,704,789	Α		0/1998	Pare, Jr. et al.
5.765.170	А		6/1998	Morikawa
5 765 179			6/1009	Tonalia
5,705,178	Α		0/1998	тапака
5.768.505	А		6/1998	Gilchrist et al.
5 771 355	Α.		6/1008	Kuzmo
5,771,555	A		0/1998	Kuzina
5,773,804	Α		6/1998	Baik
5 774 670	Δ		6/1008	Montulli
5,774,070	~		0/1998	Wontum
5,778,173	Α	*	7/1998	Apte 726/2
5 778 213	Δ		7/1998	Sĥakih et al
5,776,215	~		7/1998	Shakio et al.
5,778,377	А		7/1998	Marlin et al.
5 778 398	Δ		7/1998	Nagashima et al
5,770,550	<u></u>		7/1000	
5,780,827	А		7/1998	Zolkos et al.
5 781 632	Α		7/1998	Odom
5,701,032			7/1000	
5,784,539	А		7/1998	Lenz
5 784 564	Α		7/1998	Camaisa et al
5,701,501			7/1000	C-1
5,/80,58/	А		// 1998	Colgate, Jr.
5 BOB 400	Λ		7/1998	Potter et al.
5/8/402	_			
5,787,402	2		7/1000	
5,787,402 5,787,409	A		7/1998	Seiffert et al.
5,787,402 5,787,409 5,787,424	A A		7/1998 7/1998	Seiffert et al. Hill et al.
5,787,402 5,787,409 5,787,424	A A A		7/1998 7/1998 7/1008	Seiffert et al. Hill et al.
5,787,402 5,787,409 5,787,424 5,787,438	A A A		7/1998 7/1998 7/1998	Seiffert et al. Hill et al. Cink et al.
5,787,402 5,787,409 5,787,424 5,787,438 D397,112	A A A S		7/1998 7/1998 7/1998 8/1998	Seiffert et al. Hill et al. Cink et al. Locklin et al.
5,787,402 5,787,409 5,787,424 5,787,438 D397,112	A A A S		7/1998 7/1998 7/1998 8/1998 8/1998	Setffert et al. Hill et al. Cink et al. Locklin et al.
5,787,402 5,787,409 5,787,424 5,787,438 D397,112 5,790,977	A A A S A		7/1998 7/1998 7/1998 8/1998 8/1998	Seiffert et al. Hill et al. Cink et al. Locklin et al. Ezekiel
5,787,402 5,787,409 5,787,424 5,787,438 D397,112 5,790,977 5,793,970	A A A A S A A		7/1998 7/1998 7/1998 8/1998 8/1998 8/1998	Seiffert et al. Hill et al. Cink et al. Locklin et al. Ezekiel Fakes et al.
5,787,402 5,787,409 5,787,424 5,787,438 D397,112 5,790,977 5,793,970 5,794,053	A A A A S A A A A		7/1998 7/1998 7/1998 8/1998 8/1998 8/1998 8/1998	Seiffert et al. Hill et al. Cink et al. Locklin et al. Ezekiel Fakes et al. Doris I. et al.
5,787,402 5,787,409 5,787,424 5,787,438 D397,112 5,790,977 5,793,970 5,794,053	A A A A S A A A A		7/1998 7/1998 7/1998 8/1998 8/1998 8/1998 8/1998	Senfert et al. Hill et al. Cink et al. Locklin et al. Ezekiel Fakes et al. Doris, Jr. et al.
5,787,402 5,787,409 5,787,424 5,787,438 D397,112 5,790,977 5,793,970 5,794,053 5,794,178	A A A A A A A A A		7/1998 7/1998 7/1998 8/1998 8/1998 8/1998 8/1998 8/1998	Setfert et al. Hill et al. Cink et al. Locklin et al. Ezekiel Fakes et al. Doris, Jr. et al. Caid et al.
5,787,402 5,787,409 5,787,424 5,787,438 D397,112 5,790,977 5,793,970 5,794,053 5,794,178 5,794,210	A A A A A A A A A A A		7/1998 7/1998 7/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998	Seiffert et al. Hill et al. Cink et al. Locklin et al. Ezekiel Fakes et al. Doris, Jr. et al. Caid et al. Goldhaber et al
5,787,402 5,787,409 5,787,424 5,787,438 D397,112 5,790,977 5,793,970 5,794,053 5,794,178 5,794,210	A A A A A A A A A A A A	*	7/1998 7/1998 7/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998	Settlert et al. Hill et al. Cink et al. Locklin et al. Ezekiel Fakes et al. Doris, Jr. et al. Caid et al. Goldhaber et al. Ezenderf. 705/40
5,787,402 5,787,409 5,787,424 5,787,438 D397,112 5,790,977 5,793,970 5,794,053 5,794,178 5,794,210 5,794,221	A A A A A A A A A A	*	7/1998 7/1998 7/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998	Seiffert et al. Hill et al. Cink et al. Locklin et al. Ezekiel Fakes et al. Doris, Jr. et al. Caid et al. Goldhaber et al. Egendorf
5,787,402 5,787,404 5,787,424 5,787,438 D397,112 5,790,977 5,793,970 5,794,053 5,794,178 5,794,210 5,794,221 5,796,831	A A A A A A A A A A A A A	*	7/1998 7/1998 7/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998	Serifert et al. Hill et al. Cink et al. Locklin et al. Ezekiel Fakes et al. Doris, Jr. et al. Caid et al. Goldhaber et al. Egendorf
5,787,402 5,787,409 5,787,424 5,787,438 D397,112 5,790,977 5,793,970 5,794,053 5,794,210 5,794,221 5,796,831 5,796,831	A A A A A A A A A A A A A A A A	łł	7/1998 7/1998 7/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998	Seiffert et al. Hill et al. Locklin et al. Ezekiel Fakes et al. Doris, Jr. et al. Caid et al. Goldhaber et al. Egendorf
5,787,402 5,787,404 5,787,424 5,787,438 D397,112 5,790,977 5,793,970 5,794,053 5,794,178 5,794,210 5,794,210 5,796,851 5,796,952	A A A A A A A A A A A A A A A A A A A	*	7/1998 7/1998 7/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998	Seiffert et al. Hill et al. Cink et al. Locklin et al. Ezekiel Fakes et al. Doris, Jr. et al. Caid et al. Goldhaber et al. Egendorf
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5,787,402 5,787,402 5,787,424 5,787,428 D397,112 5,790,977 5,793,970 5,794,053 5,794,178 5,794,210 5,794,210 5,794,211 5,796,831 5,796,952 5,797,127 5,799,072 5,799,072 5,799,072 5,799,072 5,799,285 5,799,321 5,801,700 5,802,124 5,802,156 5,808,283 5,809,492 5,812,668 5,812,766 5,812,766 5,813,013 5,815,657 5,818,021	AAAASAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	*	7/1998 7/1998 7/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998	Seiffert et al. Hill et al. Cink et al. Locklin et al. Ezekiel Fakes et al. Doris, Jr. et al. Caid et al. Goldhaber et al. Egendorf
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5,787,402 5,787,402 5,787,402 5,787,424 5,787,438 D397,112 5,790,977 5,793,970 5,794,053 5,794,178 5,794,210 5,794,210 5,794,211 5,796,831 5,796,952 5,797,127 5,797,128 5,799,072 5,799,072 5,799,0285 5,799,0321 5,802,124 5,803,402 5,812,668 5,812,765 5,813,008 5,813,013 5,815,657 5,818,021	A A A A S A A A A A A A A A A A A A A A	*	7/1998 7/1998 7/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998	Seiffert et al. Hill et al. Cink et al. Locklin et al. Ezekiel Fakes et al. Doris, Jr. et al. Caid et al. Goldhaber et al. Egendorf
5,787,402 5,787,404 5,787,424 5,787,428 D397,112 5,790,977 5,793,970 5,794,053 5,794,178 5,794,210 5,794,210 5,794,221 5,796,831 5,796,852 5,797,127 5,799,072 5,802,124 5,802,156 5,812,765 5,812,076 5,813,008 5,813,013 5,815,657 5,818,021 5,818,021 5,818,021 5,818,021 5,818,021 5,818,021 5,818,021 5,818,021 5,819,030 5	AAAASAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	*	7/1998 7/1998 7/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 8/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998 9/1998	Seiffert et al. Hill et al. Cink et al. Locklin et al. Ezekiel Fakes et al. Doris, Jr. et al. Caid et al. Goldhaber et al. Egendorf

				a 1 1 1 1
5,819,226	А		10/1998	Gopinathan et al.
5.819.271	Α		10/1998	Mahonev et al.
5 819 272	Α		10/1998	Benson
5 822 410	Â	*	10/1008	McCausland at al 370/114.01
5,822,410	A	-	10/1998	MicCausiand et al 579/114.01
5,822,527	А		10/1998	Post
5.822.731	Α		10/1998	Schultz
5 822 737	Α		10/1998	Ogram
5,022,757			10/1000	NV 11
5,825,863	А		10/1998	Walker
5,825,881	Α		10/1998	Colvin, Sr.
5 825 890	Δ		10/1998	Floamal et al
5,025,050			10/1000	Mantall'
5,826,242	А		10/1998	Montulli
5,826,244	Α	*	10/1998	Huberman 705/37
5 826 270	Α		10/1998	Rutkowski et al
5 9 29 7 24			10/1009	
5,828,734	А		10/1998	Katz
5,828,833	А		10/1998	Belville et al.
5 828 840	Δ		10/1998	Cowan et al
5 9 29 945			10/1008	Lease dish at al
5,828,845	А		10/1998	Jagadish et al.
5,829,002	А		10/1998	Priest
5 831 987	Α		11/1998	Spilo
5,001,007			11/1000	Eural.
5,852,405	А		11/1998	Funk
5,832,502	А		11/1998	Durham et al.
5 834 756	Α		11/1998	Gutman et al
5 825 084	Â		11/1008	Pailoy at al
5,855,084	A		11/1998	Dancy et al.
5,835,718	А		11/1998	Blewett
5.835.726	Α		11/1998	Shwed et al.
5 835 762	Â		11/1008	Gans at al
5,855,702	A		11/1998	Galis et al.
5,838,911	А		11/1998	Rosenhauer et al.
5.838.920	Α		11/1998	Rosborough
5 841 460	Â		11/1008	Froomen et al
5,841,409	A		11/1998	Fleeman et al.
D403,321	S		12/1998	Beck et al.
5.844.972	А		12/1998	Jagadish et al.
5 845 070	Â		12/1008	Ikudomo
5,845,070	A		12/1998	IKudome
5,845,261	А		12/1998	McAbian
5.845.267	Α		12/1998	Ronen
5 845 200	Δ		12/1008	Voehii
5,045,250			12/1000	
5,847,957	А		12/1998	Cohen et al.
5,848,161	Α		12/1998	Luneau et al.
5 848 271	Δ		12/1998	Caruso et al
5.949.207	-		12/1008	Manala at al
5,848,397	А		12/1998	Marsh et al.
5,848,400	Α		12/1998	Chang
5 850 446	Δ		12/1998	Berger et al
5,050,110			12/1000	
5,850,520	А		12/1998	Griebenow et al.
5,854,897	Α		12/1998	Radziewicz et al.
5 855 008	Α		12/1998	Goldhaber et al
D404 722	c i		1/1000	Maran at al
D404,732	5		1/1999	Mason et al.
5,857,191	А		1/1999	Blackwell, Jr. et al.
5.859.898	А		1/1999	Checco
5 862 227	Ā		1/1000	Grow
5,802,557	A		1/1999	Glay
5,864,613	А		1/1999	Flood
5,864,620	Α		1/1999	Pettitt
5 864 660	٨		1/1000	Osterman et al
5,004,009	<u>.</u>		1/1999	Osterman et al.
5,864,684	А		1/1999	Nielsen
5,864,823	А		1/1999	Levitan
5 864 852	Δ		1/1999	Luotonen
D405 447	6		2/1000	Lander 1
D405,447	5		2/1999	Landry et al.
5,867,562	А		2/1999	Scherer
5.867.646	А		2/1999	Benson et al.
5 867 650	Ā		2/1000	Osterman
5,007,050	4		2/1000	Otton
5,807,659	A		2/1999	Oueson
5,867,667	А		2/1999	Butman et al.
5,870 473	Δ		2/1999	Boesch et al
5070 544	11		2/1000	Custia
5,870,544			2/1999	Curus
5.870.552	A		A / + A + + +	5
- , ,	A A		2/1999	Dozier et al.
5,870,556	A A A		2/1999 2/1999	Dozier et al. Cote et al.
5,870,556	A A A		2/1999 2/1999 2/1000	Dozier et al. Cote et al.
5,870,556 5,870,719	A A A A		2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al.
5,870,556 5,870,719 5,870,769	A A A A		2/1999 2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al. Freund
5,870,556 5,870,719 5,870,769 5,872.917	A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman
5,870,556 5,870,719 5,870,769 5,872,917 5,872,917	A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Macters et al.
5,870,556 5,870,719 5,870,769 5,872,917 5,872,930	A A A A A A ·		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al.
5,870,556 5,870,719 5,870,769 5,872,917 5,872,930 5,873,072	A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al.
5,870,556 5,870,719 5,870,769 5,872,917 5,872,930 5,873,072 5,873,100	A A A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al. Adams et al.
5,870,556 5,870,719 5,870,769 5,872,917 5,872,930 5,873,072 5,873,100	A A A A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al. Adams et al.
5,870,556 5,870,719 5,870,769 5,872,917 5,872,930 5,873,072 5,873,100 5,875,110	A A A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al. Adams et al. Jacobs
5,870,556 5,870,719 5,870,769 5,872,917 5,872,930 5,873,072 5,873,100 5,875,110 5,875,236	A A A A A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al. Adams et al. Jacobs Jankowitz et al.
5,870,556 5,870,719 5,870,769 5,872,917 5,872,930 5,873,072 5,873,100 5,875,110 5,875,236 5,875,296	A A A A A A A A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al. Adams et al. Jacobs Jankowitz et al.
5,870,556 5,870,719 5,870,769 5,872,917 5,872,930 5,873,072 5,873,072 5,873,100 5,875,110 5,875,236 5,875,236	A A A A A A A A A A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al. Adams et al. Jacobs Jankowitz et al. Shi et al.
5,870,556 5,870,719 5,870,769 5,872,917 5,873,072 5,873,100 5,875,110 5,875,236 5,875,226 5,875,229 5,875,322	A A A A A A A A A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al. Adams et al. Jacobs Jankowitz et al. Shi et al. House et al.
5,870,556 5,870,719 5,870,769 5,872,917 5,872,930 5,873,072 5,873,100 5,875,110 5,875,236 5,875,226 5,875,322 5,878,337	A A A A A A A A A A A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al. Adams et al. Jacobs Jankowitz et al. Shi et al. House et al. Joao et al.
5,870,556 5,870,719 5,870,769 5,872,917 5,872,930 5,873,100 5,875,110 5,875,236 5,875,226 5,875,226 5,875,322 5,878,337 5,884,280	A A A A A A A A A A A A A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 3/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al. Adams et al. Jacobs Jankowitz et al. Shi et al. House et al. Joao et al. Anderson et al.
5,870,556 5,870,719 5,870,769 5,872,917 5,873,072 5,873,100 5,875,110 5,875,236 5,875,226 5,875,226 5,875,322 5,878,337 5,884,289	A A A A A A A A A A A A A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 3/1999 3/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al. Adams et al. Jacobs Jankowitz et al. Shi et al. House et al. Joao et al.
5,870,556 5,870,719 5,870,769 5,872,917 5,872,930 5,873,100 5,875,110 5,875,226 5,875,226 5,875,322 5,878,337 5,884,289 5,887,249	A A A A A A A A A A A A A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 3/1999 3/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al. Adams et al. Jacobs Jankowitz et al. Shi et al. House et al. Joao et al. Anderson et al. Schmid
5,870,556 5,870,719 5,870,769 5,872,917 5,872,930 5,873,100 5,875,110 5,875,236 5,875,236 5,875,236 5,875,322 5,878,337 5,884,289 5,887,249 5,887,249	A A A A A A A A A A A A A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 3/1999 3/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al. Adams et al. Jacobs Jankowitz et al. Shi et al. House et al. Joao et al. Anderson et al. Schmid Koreeda
5,870,556 5,870,719 5,870,769 5,872,917 5,872,930 5,873,072 5,873,100 5,875,110 5,875,236 5,875,2322 5,878,337 5,884,289 5,887,249 5,887,249 5,887,249 5,887,249	A A A A A A A A A A A A A A A A A A A		2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 2/1999 3/1999 3/1999 3/1999	Dozier et al. Cote et al. Maritzen et al. Freund Hellman Masters et al. Kight et al. Adams et al. Jacobs Jankowitz et al. Shi et al. House et al. Joao et al. Anderson et al. Schmid Koreeda

(56) References Cited

U.S. PATENT DOCUMENTS

5,894,510	Α	4/1999	Felger
5,897,620	Α	4/1999	Walker et al.
5,897,621	Α	4/1999	Boesch et al.
5,898,780	Α	4/1999	Liu et al.
5,899,980	Α	5/1999	Wilf et al.
5,903,721	Α	5/1999	Sixtus
5,905,979	Α	5/1999	Barrows
5,914,472	Α	6/1999	Foladare et al.
5,933,480	Α	8/1999	Felger
5,950,121	A *	9/1999	Kaminsky et al 455/410
5,960,069	Α	9/1999	Felger
5,963,625	Α	10/1999	Kawecki et al.
5,966,698	A *	10/1999	Pollin 705/34
5,970,477	Α	10/1999	Roden
5,991,750	Α	11/1999	Watson
6,006,251	A *	12/1999	Toyouchi et al 709/203
6,016,484	Α	1/2000	Williams et al.
6,029,154	Α	2/2000	Pettitt
6,041,315	A *	3/2000	Pollin 705/45
6,047,270	Α	4/2000	Joao et al.
6,049,785	A *	4/2000	Gifford 705/39
6,108,642	A	8/2000	Findley
6,185,416	B1	2/2001	Rudokas et al.
6,195,649	B1 *	2/2001	Gifford 705/75
6,199,051	B1 *	3/2001	Gifford 705/75
6,205,437	B1 *	3/2001	Gifford 705/75
6,263,501	BI	7/2001	Schein et al.
6,282,276	BI	8/2001	Felger
6,292,478	BI	9/2001	Farris
6,327,352	B1	12/2001	Betts et al.
6,549,889	B2	4/2003	Lauffer
6,553,108	B1	4/2003	Felger
6,567,511	B2	5/2003	Betts et al.
6,636,590	B1	10/2003	Jacob et al.
7,013,001	B1	3/2006	Felger
7,058,166	B2	6/2006	Betts et al.
7,096,192	B1	8/2006	Pettit et al.
7,117,171	B1 *	10/2006	Pollin 705/35
7,340,045	B2	3/2008	Felger
2003/0195846	A1	10/2003	Felger
2003/0195847	A1	10/2003	Felger
2003/0195848	Al	10/2003	Felger
2006/0153350	Al	7/2006	Felger
2000/01/2020	<u>A1</u>	2/2000	Felger
2009/00409/5	A 1	2/2009	Felger
2009/0033313	AI	2/2009	1 cigei

FOREIGN PATENT DOCUMENTS

EP	0629093	12/1994
EP	0676888	10/1995
EP	0705019	4/1996
EP	0335562	7/1996
EP	0601523	9/1998
EP	0527855	12/1998
EP	0604042	8/2000
WO	85/02510	6/1985
WO	94/09587	4/1994
WO	94/24803	10/1994
WO	94/28683	12/1994
WO	95/06993	3/1995
WO	95/08231	3/1995
WO	95/11576	4/1995
WO	95/24011	9/1995
WO	95/24094	9/1995
WO	95/27255	10/1995
WO	95/30317	11/1995
WO	95/35619	12/1995
WO	96/04618	2/1996
WO	96/05706	2/1996
WO	96/09714	3/1996
WO	96/13814	5/1996
WO	WO 97/41537	11/1997
WO	WO 98/40809	9/1998
WO	PCT/US00/30504	3/2001

OTHER PUBLICATIONS

Stroud, Jerri "1-800-Wide-Open Toll-Free Phone Service Becoming A Battleground" Nov. 1, 1992 St. Louis Post-Dispatch, p. 1E.* Anonymous "Technology Stems Credit Card Fraud" Nov. 20, 1996, Financial Services Report, V13N24.* US 5,351,994, 10/1994, Pollin (withdrawn). U.S. Appl. No. 09/432,811, Felger. U.S. Appl. No. 09/039,335, Felger. U.S. Appl. No. 09/260,068, Felger. U.S. Appl. No. 09/280,862, Felger. U.S. Appl. No. 09/280,863, Felger. U.S. Appl. No. 09/362,238, Felger. U.S. Appl. No. 09/362,239, Felger. U.S. Appl. No. 09/432,809, Felger. U.S. Appl. No. 11/971,047, Felger. A. Rogers, "Internet Show Focuses On Security," Computer Reseller News, Sep. 28, 1998, 2 pages. K. Nash, "Electronic profiling," Computer World, vol. 32, Issue 6, Feb. 9, 1998, 5 pages. D. Linthicum, "Open for business," PC Magazine, vol. 16, Issue 20, Nov. 18, 1997, 30 pages. Description of NSTI Processing Methods and Services, May 14, 1990, 12 pages. Anonymous, "Technology Stems Credit Card Fraud, Financial Services Report," Potomac, Nov. 20, 1996, p. 1. W.C. Philbrick, The Use Of Factoring In International Commercial Transactions and the Need For Legal Uniformity As Applied To Factoring Transactions between the United States And Japan, Commerical Law Journal, Spring 1994; 99, 1; ABI/Global pp. 141-156. J. Stroud, "1-800-Wide-Open Toll-Free Phone Service Becoming A Battleground," Nov. 1, 1992, St. Louis Post-Dispatch, p. 1E. U.S. Appl. No. 09/245,713, filed Feb. 8, 1999, Felger. U.S. Appl. No. 09/356,572, filed Dec. 10, 1999, Felger. U.S. Appl. No. 09/432,808, filed Nov. 4, 1999, Felger. "Verified by Visa: How it Works," http://usa.visa.com/personal/security/visa_security_program/vbv/how_it_works.html, printed Jun. 7, 2005, 2 pages. Hollander, J., "Polaroid Puts the Finger on E-Commerce Security," E-Commerce Times, Feb. 18, 1999, 2 pages. Richmond, Riva, "Scammed! Web merchants use new tools to keep buyers from ripping them off," The Wall Street Journal Online, Jan. 2003, http://online.wsj.com/article_print/ 27. 0..SB1043184582515816584,00.html, 7 pages. Written Opinion for International (PCT) Application No. PCT/US00/ 30504, mailed Jul. 27, 2001, 4 pages. International Preliminary Examination Report for International (PCT) Application No. PCT/US/00/30504, mailed Jan. 29, 2002, 5 pages. Official Communication for European Patent Application No. 00976971.2, dated Jun. 23, 2004, 3 pages. Official Communication for European Patent Application No. 00976971.2, dated Jul. 23, 2004, 2 pages. Official Action for U.S. Appl. No. 08/658,378, mailed Dec. 23, 1996, 10 pages Official Action for U.S. Appl. No. 08/658,378, mailed Jun. 11, 1997, 7 pages. Notice of Allowance for U.S. Appl. No. 08/658,378, mailed Sep. 2, 1997, 7 pages Official Action for U.S. Appl. No. 08/757,563, mailed Dec. 11, 1997, 10 pages Official Action for U.S. Appl. No. 08/757,563, mailed May 14, 1998, 10 pages Notice of Allowance for U.S. Appl. No. 08/757,563, mailed Nov. 12, 1998, 5 pages. Official Action (Restriction Requirement) for U.S. Appl. No. 08/796,448, mailed Jun. 22, 1998, 4 pages Official Action for U.S. Appl. No. 08/796,448, mailed Aug. 13, 1998, 9 pages. Notice of Allowance for U.S. Appl. No. 08/796,448, mailed Nov. 12, 1998, 5 pages. Official Action (Restriction Requirement) for U.S. Appl. No. 08/971,047, mailed Oct. 26, 1998, 5 pages.

(56) **References Cited**

OTHER PUBLICATIONS

Official Action for U.S. Appl. No. 08/971,047, mailed Dec. 3, 1998, 7 pages.

Notice of Allowance for U.S. Appl. No. 08/971,047, mailed Feb. 16, 1999, 5 pages.

Official Action for U.S. Appl. No. 09/432,811, mailed Oct. 2, 2002, 6 pages.

Official Action (Restriction Requirement) for U.S. Appl. No. 09/432,811, mailed Feb. 11, 2003, 6 pages.

Official Action (Restriction Requirement) for U.S. Appl. No. 09/432,811, mailed Jun. 17, 2003, 5 pages.

Official Action for U.S. Appl. No. 09/432,811, mailed Aug. 27, 2004, 8 pages.

Official Action for U.S. Appl. No. 09/432,811, mailed Apr. 1, 2005, 7 pages.

Official Action for U.S. Appl. No. 09/432,811, mailed Apr. 21, 2006, 10 pages.

Official Action for U.S. Appl. No. 09/432,811, mailed May 7, 2007, 8 pages.

Official Action for U.S. Appl. No. 09/432,811, mailed Oct. 22, 2007, 9 pages.

Official Action for U.S. Appl. No. 09/432,811, mailed May 2, 2008, 13 pages.

Notice of Allowance for U.S. Appl. No. 09/432,811, mailed Apr. 1, 2009, 10 pages.

Official Action for U.S. Appl. No. 09/495,923, mailed Jun. 22, 2000, 16 pages.

Official Action for U.S. Appl. No. 09/495,923, mailed Nov. 6, 2000, 4 pages.

Notice of Allowance for U.S. Appl. No. 09/495,923, mailed Apr. 11, 2001, 5 pages.

Official Action for U.S. Appl. No. 09/495,924, mailed Jan. 31, 2002, 5 pages.

Official Action for U.S. Appl. No. 09/495,924, mailed May 9, 2002, 7 pages.

Official Action for U.S. Appl. No. 09/495,924, mailed Aug. 15, 2002, 15 pages.

Notice of Allowance for U.S. Appl. No. 09/495,924, mailed Dec. 3, 2002, 7 pages.

Official Action for U.S. Appl. No. 10/274,274, mailed Jul. 16, 2003, 17 pages.

Official Action for U.S. Appl. No. 10/274,274, mailed Jan. 13, 2004, 17 pages.

Official Action for U.S. Appl. No. 10/274,274, mailed Jun. 3, 2004, 16 pages.

Official Action for U.S. Appl. No. 10/274,274, mailed Jan. 5, 2005, 16 pages.

Notice of Allowance for U.S. Appl. No. 10/274,274, mailed Jun. 16, 2005, 6 pages.

Official Action for U.S. Appl. No. 10/422,751, mailed Jun. 7, 2007, 13 pages.

Official Action (Restriction Requirement) for U.S. Appl. No. 10/422,751, mailed Feb. 25, 2008, 9 pages.

Official Action for U.S. Appl. No. 10/422,757, mailed Jun. 7, 2007, 12 pages.

Official Action (Restriction Requirement) for U.S. Appl. No. 10/422,757, mailed Jan. 30, 2008, 5 pages.

Official Action for U.S. Appl. No. 10/422,758, mailed Jun. 7, 2007, 10 pages.

Official Action (Restriction Requirement) for U.S. Appl. No. 10/422,758, mailed Feb. 25, 2008, 8 pages.

Official Action for U.S. Appl. No. 11/371,900, mailed, Nov. 28, 2006, 7 pages.

Official Action for U.S. Appl. No. $11/371,\!900,$ mailed Jun. 6, 2007, 5 pages.

Notice of Allowance for U.S. Appl. No. 11/371,900, mailed Sep. 27, 2007, 3 pages.

Official Action for U.S. Appl. No. 09/260,068, mailed Jun. 14, 1999, 7 pages.

Official Action for U.S. Appl. No. 09/260,068, mailed Oct. 28, 1999, 7 pages.

Official Action for U.S. Appl. No. 09/260,068, mailed Mar. 24, 2000, 6 pages.

Official Action for U.S. Appl. No. 09/260,068, mailed Aug. 25, 2000, 8 pages.

Official Action for U.S. Appl. No. 09/260,068, mailed Oct. 30, 2000, 4 pages.

Official Action for U.S. Appl. No. 09/039,335, mailed Apr. 5, 1999, 17 pages.

Official Action for U.S. Appl. No. 09/039,335, mailed May 18, 1999, 16 pages.

Official Action for U.S. Appl. No. 09/356,572, mailed Dec. 10, 1999, 17 pages.

Official Action for U.S. Appl. No. 12/255,857, mailed Aug. 16, 2010. Official Action for U.S. Appl. No. 12/255,857, mailed Jan. 4, 2011. Official Action for U.S. Appl. No. 12/255,871, mailed Aug. 17, 2010. Official Action for U.S. Appl. No. 12/255,871, mailed Dec. 22, 2010. Official Action for U.S. Appl. No. 12/255,857, mailed Aug. 18, 2011.

Official Action for U.S. Appl. No. 12/255,871, mailed Aug. 18, 2011. Credit Card Fraud Control Corporation v. Cybersource Corporation Original Complaint filed in The U.S. District Court, For The Southern

District of Florida West Palm Beach Division, Civil Action No. 12-CV-81141 filed Oct. 17, 2012, 4 pages.

Defendant Cybersource Corporation's Answer and Affirmative Defenses to Plaintiff's Complaint and Defendant's Demand for Jury Trial filed in The U.S. District Court, For The Southern District of Florida West Palm Beach Division, Civil Action No. 12-CV-81141 filed Dec. 10, 2012, 8 pages.

Credit Card Fraud Control Corporation v. *Paypal, Inc.* Original Complaint filed in The U.S. District Court, For The Southern District of Florida West Palm Beach Division, Civil Action No. 12-CV-81143 filed Oct. 17, 2012, 4 pages.

Defendant Paypal, Inc.'s Answer, Affirmative Defenses, and Counterclaim to Plaintiff's Original Complaint filed in The U.S. District Court, For The Southern District of Florida West Palm Beach Division, Civil Action No. 12-CV-81143 filed Dec. 10, 2012, 7 pages.

Plaintiff's Answer to Defendant's Counterclaim filed in The U.S. District Court, For The Southern District of Florida West Palm Beach Division, Civil Action No. 9:12-CV-81143 filed Dec. 17, 2012, 3 pages.

Notice of Allowance for U.S. Appl. No. 12/255,871, mailed May 11, 2012.

Notice of Allowance for U.S. Appl. No. 12/255,857, mailed Mar. 2, 2012.

* cited by examiner





FIG. 3



FIG. 4





FIG. 6



FIG. 7







FIG. 10A







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METHOD OF BILLING A PURCHASE MADE OVER A COMPUTER NETWORK

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application is a continuation of U.S. patent application Ser. No. 10/422,758, filed Apr. 25, 2003, which is a divisional of U.S. patent application Ser. No. 09/432,811, filed Nov. 4, 1999, now U.S. Pat. No. 7,555,458, which is a 10 continuation-in-part of U.S. patent application Ser. No. 09/362,238, filed Jul. 28, 1999. U.S. patent application Ser. No. 09/362,238 claims the benefit of and priority under 35 U.S.C. §119(e) to U.S. Provisional Application No. 60/139, 475, filed Jun. 17, 1999, entitled "Method of Billing a Com- 15 munication Session and for a Purchase Made Over a Computer Network". U.S. patent application Ser. No. 09/362,238 is also a continuation-in-part of U.S. patent application Ser. No. 09/280,863, filed Mar. 30, 1999, which is a continuationin-part of U.S. patent application Ser. No. 09/245,713, filed 20 Feb. 8, 1999, which is a continuation-in-part of U.S. patent application Ser. No. 09/039,335, filed Mar. 16, 1998, which is a continuation-in-part of U.S. patent application Ser. No. 08/757,563, filed Nov. 27, 1996, now U.S. Pat. No. 5,960, 069, which is a continuation-in-part of U.S. patent application 25 Ser. No. 08/658,378, filed Jun. 5, 1996, now U.S. Pat. No. 5,802,156, each of which are incorporated herein by reference in their entirety.

The present application is also related to U.S. patent application Ser. Nos. 09/432,809, filed Nov. 4, 1999, Ser. No. ³⁰ 09/362,239, filed Jul. 28, 1999, Ser. No. 09/280,862, filed Mar. 30, 1999, Ser. No. 09/495,923, filed Feb. 2, 2000, now U.S. Pat. No. 6,282,276, Ser. No. 09/432,808, filed Nov. 4, 1999, Ser. No. 09/432,809, filed Nov. 4, 1999 and Ser. No. 09/356,572, filed Jul. 19, 1999, each of which are incorpo- ³⁵ rated herein by reference in their entirety.

BACKGROUND OF THE INVENTION

A. Technical Field

The present invention relates to an efficient payment authorization and billing arrangement for products and services purchased over a computer network, such as the Internet. More particularly, the present invention relates to a method for providing payment authorization and a billing arrange-45 ment for a call or a communication session to a service representative that is accessible over a telecommunications network or a computer network, such as the Internet, and to session limiting, blocking, fraud control associated with such a communication session. The present invention also relates 50 to a method for providing payment authorization and a billing arrangement for effecting a sale of goods and/or services over a computer network, such as the Internet.

B. Description of the Related Arts

So-called psychic network services have been in operation 55 for several years. A service representative, or agent, at such a service counsels a caller who has called on an 800 or 900 telephone number regarding life, love and prosperity. For a fee, the caller can ask any question of the service representative and, generally, the service representative may counsel to 60 the caller regarding the question.

Presently, a caller to the Yellow Pages Psychic Network service dials one of a plurality of telephone numbers that are used by the network for determining the advertising source from which the caller became aware of the psychic network service. Each respective telephone number connects a caller to the same service bureau where an automatic call distribution (ACD) system distributes calls among service representatives. The caller hears an announcement regarding costs and charges, referred to as a preamble, and is then offered a menu of choices. The caller is given a choice to hear brief resumes of the service representatives that are presently available. When the caller decides on a specific psychic, the caller may press the * button, for example, to reach that particular psychic When the caller already knows the extension number of a psychic that the caller has used before, that particular telephone extension may be entered. The caller controls the call, but can speak only to one psychic during the call.

ACD telecommunications equipment is known for providing this and other types of telecommunications services. Common-controlled ACD equipment is available, for example, from Lucent Technologies, Inc. and other manufacturers of common-controlled switching equipment. Typically, a service bureau or related organization offers services through a service bureau-owned ACD system. Such an ACD system directs a call from a caller requesting service to a next available service representative listed in a service representative availability queue. It is always assumed that one service representative responds to a call. Service representatives, typically equipped with displays and operator type headsets for hands-free operation, usually consult databases for, for example, making travel reservations. To this end, service representatives have access to large computer databases of travel reservation and billing information.

Billing arrangements for such service bureau organizations are primitive and may rely on a 900 service for the service provider to bill the caller for the service provided. For an 800 number call, the service provider pays for the call and must insure that payment for the service will be received, even more so than for 900-based call. The service provider records credit card or other payment data manually into a memory of a billing system for properly billing the call. Such procedures have led to many callers questioning their bills in many instances. Additionally, dishonest callers have received free calls using fraudulent payment schemes, improper granting of credit and the like because of inefficiencies associated with conventional billing procedures.

One approach for overcoming these and other problems is provided by a service offered by a company known as Mile High Psychics that uses credit cards for prepayment for blocks of service usage time. Credit authorization is obtained well in advance of when service is provided. For example, the customer may purchase a block of 25 minutes of service in advance of a call and utilize a personal identification number or code (PIN) at the time of the call for accessing the service.

Another approach is presented by U.S. Pat. No. 5,475,740 to Biggs, Jr., et al. which discloses a system connected to a central distribution computer that enables a user to access and pay for amenities using a telephone for entering amenity identification and billing information. A billing database is connected to the central distribution computer for validating entered billing information.

U.S. Pat. No. 5,383,113 to Kight et al. and U.S. Pat. No. 5,283,829 to Anderson are both directed to a method for paying bills electronically. According to U.S. Pat. No. 5,383, 113 to Kight et al., a computerized payment system is implemented by which a consumer may instruct a service provider by telephone, computer terminal, or by using another telecommunications technique to pay various bills without the consumer being required to write a check for each bill. The service provider collects information from consumers, financial institutions and merchants, and arranges payment to the merchants according to each consumer's specific instructions. Similarly, U.S. Pat. No. 5,283,829 to Anderson dis-

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closes an electronic bill payment system and method that includes billing equipment for creating approval records and generating approval numbers for each pre-authorized subscriber. The system also includes an interactive payment approval apparatus into which subscribers dial for approving 5 payment and which determines, based upon information collected, whether to initiate an electronic funds transfer. A series of security checks and comparisons are performed for guarding against accidental and malicious entry of approval numbers.

U.S. Pat. No. 4,908,850 to Masson et al. discloses an information network and method for providing a nationwide audio text network, including electronic billing, that is useful for a wide variety of applications. The system allows for interactive communication with a computer that supplies the net- 15 work information to a 1-800 caller. The system is also capable of obtaining electronic credit card authorization or charges, and controls routing an incoming call for redirecting the call to a live operator or to other equipment, or to outgoing lines to any desired destination.

In another conventional system, credit cards are used for paying for service representative calls. In this system, each time the caller calls, the caller's credit card account is accessed and a predetermined charge, such as 100 dollars, is authorized and set aside from the caller's credit card available 25 rization and a billing arrangement for a communication sesline of credit. The caller then speaks with a service representative. The actual cost of the call is determined at the end of the call, and then transferred to the credit card company in the normal course of business. The charge is then compared to the amount that has been set aside and the difference between the 30 amount that has been set aside and the actual cost of the call is returned to the caller's available line of credit. Unfortunately for the caller, this process usually takes approximately 3 or 4 days. As a result, the portion of the caller's available line of credit that has been set aside is unavailable for other 35 purchase. calls or purchases for the approximately 3 to 4 days that it takes the credit card company to reconcile the authorized amount and the actual amount of the call.

Additionally, there is a growing need for providing a billing arrangement for effecting a sale of an item or a service occur- 40 ring over a computer network. For example, U.S. Pat. No. 5,724,424 to Gifford discloses a network sales system that allows a user to purchase goods or information over a computer network, such as the Internet. According to Gifford, the network sales system includes a plurality of buyer computers, 45 a plurality of merchant computers and a payment computer that are interconnected by the computer network. A user at a buyer computer purchases a product and the buyer computer sends a purchase message to a merchant computer. The merchant computer constructs a payment order that it sends to the 50 payment computer. The payment computer authorizes the purchase and sends an authorization message to the merchant computer. When the merchant computer receives the authorization message, product is sent to the buyer computer. Alternatively, the buyer computer can send a payment order 55 directly to the payment computer, which, in turn, sends an authorization message back to the buyer computer that includes an unforgeable certificate indicating that the order is valid. The buyer computer then constructs a purchase message that is sent to the merchant computer. When the mer- 60 chant computer receives the purchase request, the product is sent to the buyer computer based on the pre-authorized payment order.

U.S. Pat. No. 5,715,314 to Payne et al. discloses a similar network-based sales system that includes at least one buyer 65 computer, at least one merchant computer and at least one payment computer that are interconnected by a computer

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network, such as the Internet. According to Payne et al., a merchant computer can respond to payment orders from a buyer computer without the merchant computer having to communicate directly with the payment computer for ensuring that the user is authorized to purchase the product and without the merchant computer having to store information in a database regarding which buyers are authorized to purchase which products. When the merchant computer receives an access message from the buyer computer identifying a product to be purchased, the merchant computer need only check the access message for ensuring that the access message was created by the payment computer, thereby establishing that the buyer is authorized to purchase the product.

Despite these conventional billing arrangements for voicebased telephony services over a circuit-switched telecommunications network and for products and services purchased over a computer network, such as the Internet, there is a need for an efficient payment authorization and billing arrangement for products, services and telephony-based services pur-²⁰ chased over a computer network.

BRIEF SUMMARY OF THE INVENTION

The present invention provides an efficient payment authosion between a user and a service representative that is accessible over a circuit-switched telecommunications network and a packet-switched telecommunications network, such as the Internet, and to session limiting, blocking, fraud control associated with such a communication session. The present invention also provides an efficient payment authorization and billing arrangement for products and services purchased over a computer network, such as the Internet, and to purchase limiting, blocking, fraud control associated with such a

The advantages of the present invention are provided by a method of billing a communication session between a service representative and a user in which a request is received from a user for a communication session between the user and a service representative. Information associated with a credit account is requested before the user is connected to a service representative, and the information associated with the credit account is received in real time. According to the invention, the information associated with the credit account can be credit card information, debit card information, checking account information, electronic funds transfer information, a telephone number, a cable television account, a utility service account, or an Internet service provider account. Credit account information is communicated to a payment authorization database, which can be located locally or remotely. When the credit account information relates to, for example, a credit card, the credit account information includes the received information associated with the credit account and a predetermined amount that is to be set aside in the credit account. Alternatively, the credit account information includes the received information associated with the credit account and a predetermined amount that is to be charged to the credit account. Payment authorization information associated with the credit account is received from the payment authorization database before the user is connected to the service representative, and the user is connected to the service representative when the payment authorization information is affirmative. A total charge for the communication session is calculated when the communication session is terminated based on an actual time that the user is connected to the service representative. Preferably, the charge for the communication session is based on a per minute rate. Session charge information associated with the communication session is transmitted to the payment authorization database when the communication session is terminated. Accordingly, the session charge information includes information for charging the credit account an amount representing a charge for the 5 communication session.

According to one aspect of the invention, when the credit account information relates to, for example, a credit card, the credit account information includes an authorization of a predetermined amount, and the session charge information 10 includes information for reversing the authorization of the predetermined amount and for reauthorizing the credit account the amount representing the charge for the communication session. Alternatively, the session charge information is a credit representing an amount that is the predeter- 15 mined amount minus the amount representing the charge for the communication session.

The present invention also provides a method for controlling communication session access to a service representation in which a request is received from a user for a communica- 20 tion session, such as a computer-network telephony call or a multi-media communication session, between the user and a service representative. Information associated with the user is also received, and a database is accessed. The received information associated with the user is compared with information 25 call distribution system that is programmed to operate stored in the database, and the user is connected to the service representative when the received information associated with the user passes the comparison with the information stored in the database. The communication session can be blocked or limited based on different criteria, such as a frequency of 30 communication sessions from the user during a predetermined period of time, an amount of money spent by the user during a predetermined period of time, a length of communication sessions during a predetermined period of time, an identity of the user, a computer-network address of the user, 35 credit account information of the user, personal information of the user, and/or a user billing address.

Another embodiment of the present invention provides a method of effecting a sale over a computer network in which it is determined whether a user passes fraud control before 40 effecting a sale over a computer network. Information associated with a method of payment, such as credit card information, debit card information, checking account information, a telephone service account, a cable television account, a utility service account, or an Internet service provider 45 account, is requested from the user after the user passes the fraud control. Information associated with the method of payment is received from the user in real time. Method-ofpayment information is communicated to a payment authorization database, which can be located locally or remotely. 50 The method-of-payment information includes the received information associated with the method of payment. Payment authorization information associated with the method of payment is received from the payment authorization database. A sale transaction is completed when the payment authorization 55 information is affirmative. Sale charge information associated with the sale effected over the computer network is transmitted to the payment authorization database when the sale transaction is complete. The sale charge information includes information for charging the method of payment an 60 amount representing a charge for the sale.

According to one aspect of this embodiment of the present invention, whether a user passes fraud control is based on computer-network address information associated with the user that is received from the computer network and com- 65 puter-network address information that is received from the user. The computer-network address information received

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from the computer network is compared to the computernetwork address information received from the user before the information associated with the method of payment is requested. According to another aspect of this embodiment of the present invention, whether a user passes fraud control is determined based on received information associated with the user. A database is accessed, and the received information associated with the user is compared with information stored in the database before information associated with the method of payment is requested from the user. The method also provides that information associated with the user is compared with information stored in the database before determining whether to block, limit or complete the sale transaction. The received information can include an identity of the user, a frequency of sales to the user during a predetermined period of time, an amount of money spent by the user during a predetermined period of time, a computer-network address for the user, credit account information associated with the user, a billing address, and/or personal information of the user.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a schematic block diagram for an automatic according to the present invention;

FIG. 2 shows a flowchart of the sequence of operations for logging a service representative into a service representative availability queue according to the present invention;

FIG. 3 shows a flowchart for processing a call received from a circuit-switched telecommunications network or by way of computer-network telephony over a packet-switched computer network, such as the Internet, for a service representative according to the present invention;

FIG. 4 shows a flow diagram for a real-time billing system for circuit-switched and packet-switched calls in accordance with the principles of the present invention;

FIG. 5 shows a schematic block diagram of a system for billing a communication session conducted over a computer network, such as the Internet, according to the present invention:

FIG. 6 shows a flowchart for a communication for actuating and entering a service representative into a service representative availability queue a computer network according to the present invention;

FIG. 7 shows a flowchart for processing a service representative communication session to a service bureau over a computer network according to the present invention;

FIG. 8 shows a flow diagram for a real-time billing system for a billing communication session occurring over a computer network according to the present invention;

FIG. 9 shows a flow diagram for a real-time billing system for effecting a sale over a computer network according to the present invention; and

FIGS. 10a-10c show a flow diagram summarizing the realtime billing and fraud control system of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 shows a schematic block diagram for an automatic call distribution (ACD) system that is programmed to operate according to the present invention. An exemplary ACD system that is suitable for the present invention is disclosed by U.S. Pat. No. 5,802,156 to Felger, which is incorporated by reference herein. An ACD system provides switched network access to a plurality of service representatives or agents. Such ACD systems may vary from manufacturer to manufacturer,

but according to the present invention, such an ACD system operates under common-control of a controller **110**. The ACD system of FIG. **1** includes a switch **100** that is connected to a plurality of service representatives, or agents, that operate from service representative positions **101-1** through **102-n**. 5 ACD **100** redirects calls (circuit-switched voice and data) to any of service representative positions **101-1** through **102-n**.

A service representative position, such as position **101-1**, can include a remote dial-up terminal **101***a* that has a caller identification display **101***b*. Alternatively, a service representative position can be a conventional service representative position, such as position **101-2**, that includes such equipment (not shown) as an operator headset, a cathode ray tube display, a computer system and automatic number identification/name display. Accordingly, such a service representative position operates as an extension line for the ACD system. As yet another alternative, a service representative position may include an intelligent telephone terminal, a personal computer or other intelligent terminal known in the art (not shown).

A service representative at a service representative position indicates availability for providing service to callers by performing a log-in procedure, such as that shown by the flowchart of FIG. **2**, which will be further described herein. A caller requesting service is handled according to the flowchart 25 of FIG. **3**, which will also be further described herein.

A plurality of service circuits and devices are connected to switch **100** that provide various signaling, data input, data output, conferencing and other services. Such service circuits and devices include, but are not limited to, a dual tone multi-³⁰ frequency (DTMF) receiver and decoder **120**, an automatic number identification (ANI), a dialed number identification (DNI) circuitry **125**, an audio response (message) unit **135**, a conference bridge circuit **130** and a modulator/demodulator circuitry (MODEM) **140**. One or more of each type of these ³⁵ service circuits and devices are typically provided, with the number depending on their respective frequency of use.

Each service circuit or device is called into play by controller **110** in accordance with call processing and control programs stored in a memory **115**. One control program 40 residing in memory **115** is a real time of day, day, month and year clock that is accurately maintained by, for example, periodic satellite update and must be preserved even in the event of a local power loss to the system. Another program is a translation program that may be needed for translating a 45 called telephone number to an advertising source or for translating an extension number of a service representative to a remote telephone number for remote dialing, when required.

DTMF receiver and decoder 120 is especially important for receiving information, such as zip code, address, credit card 50 number, bank account number, name input, command and signals for the system of the present invention for caller control and system control to the extent of at least providing service, call blocking, call limiting, fraud control and payment and billing features. Audio response (message) unit 135 55 preferably includes an audible announcement capability for querying a caller and a connection to DTMF receiver/decoder 120 for receiving and decoding input data entered via a telephone keypad in response to an announcement query. Alternatively, DTMF receiver/decoder 120 and other input circuits 60 may be replaced by speech recognition and other automatic input devices. Modem 140 automatically forwards form-ofpayment data to a credit agency or bank under control of controller 10, and receives authorization in real time for a payment or a charge to an account. Modem 140 may comprise 65 a network data mover (NDM) modem or a remote job entry (RJE) modem. Once a call to a service representative is ter-

minated, modem **140** communicates call charge information to a remotely-located billing agency (not shown).

Callers call on lines 110-1 and 110-2, which are representative of lines/trunks connecting ACD 100 to a telephone switching center. A number of different telephone numbers identified to the lines/trunks at a telephone central office (not shown) may be used for identifying the source of advertising or other source by which a caller learned of the existence of the call-in service. Typically, signaling information is provided in advance of a call on the same or a different line. The signaling information includes the address of the calling party and may also include the called address. A dialed number identification/automatic number identification (ANI/DNI) unit 125 identifies the dialed number for determining, for example, the source by which a caller learned of the service. ANI/DNI unit 125 also indicates the calling telephone number for subsequent comparison with a telephone number entered through a telephone keypad by the caller in response to a request generated by audio response (message) unit 135 20 once the call has begun or for comparison with negative databases, as will be further described herein.

Briefly and according to one embodiment of the present invention, a toll, an 800 or 900 telephone number or an Internet address may be used for connecting a new caller to a single service representative in an available service representative at, for example, a psychic network service. A second telephone number or Internet address may be used for identifying a psychic twins service, such that two service representatives are connected simultaneously to a caller through a dual representative service representative availability queue. A third number or Internet address is used for a three service representative call, and so on. In a preferred embodiment of the present invention, a caller is handled according to a call processing algorithm shown in FIG. **3**, which is described subsequently herein.

Conference bridge **130** may include automatic dialing equipment for dialing a telephone number for a service representative. Alternatively, automatic dialing circuits (not shown) may be separately provided. Of course, in accordance with the present invention, a plurality of service representatives are simultaneously connected to a caller desiring such service and automatic dialing circuits may or may not be needed in a particular conference call, depending on whether the service representative is directly connected to ACD **100** as an extension or must be "dialed-up." Ringing circuits (not shown) transmit ringing signals toward a service representative, but according to the present invention, audible ringing is not provided the caller. The service representative is connected at the time the service representative goes off-hook.

The concepts of the present invention are fully applicable to all forms of telephony, whether circuit-switched based telephony or computer-network telephony, such as packetswitched telephony. For example, a typical router connected to a computer network, such as the Internet, can handle packetized telephony data in a manner similar to how the ACD system shown in FIG. 1 handles circuit-switched telephony. Just as an ACD system provides circuit-switched network access to a plurality of service representatives or agents, a router provides packet-switched network access to a plurality of computer network addresses. The router redirects Internettype telephony and communication session data packets to service representative positions in a well-known manner. In that regard, an Internet address may be used for connecting a computer-network telephony caller to a single service representative in an available service representative at, for example, a psychic network service. A second Internet address may be used for identifying a psychic twins service, such that two service representatives are connected simultaneously to a caller through a dual representative service representative availability queue. A third Internet address is used for a three service representative call, and so on. For a computer-network based embodiment of the invention, a service 5 representative position is preferably an intelligent telephone terminal, a personal computer or other intelligent terminal known in the art.

FIG. 2 shows a flowchart of the sequence of operations controlled by controller 10 when actuating and entering a 10 service representative into a service representative availability queue according to the present invention. The overall procedure of FIG. 2 is performed whether the service representative is accessing the service bureau through a circuitswitched telecommunications network or by way of packet- 15 switched telephony. At step 200, a service representative calls the service bureau and indicates the availability of a service representative for providing service. Of course, when the service representative is directly connected to switch 100, such as by a private dedicated line, the calling service repre-20 sentative may need only to merely pick up the phone or log on, respectively. Whether or not the calling service representative is connected via a dedicated line, the extension or telephone number is automatically recognized by controller **110**, for example, through automatic number identification 25 circuit 125. In a packetized telephony-based embodiment, the Internet address or log-on data of the service representative may be compared against a database for determining service representative identity.

An audio response unit 135 is connected to the service 30 representative at step 210. Typically, the time of day and date is recorded in memory 115 via controller 110 recording the time and date that the service representative has offered to begin servicing callers. The service representative receives a programmed announcement at step 210 querying the service 35 representative to identify certain choices and preferences for recording in memory 115. For example, a pair of psychic twins may prefer to offer services together to a caller. That is, a service representative A may request to only be connected in a psychic dual-conferencing call with a specific psychic twin 40 service representative B. Other preferences may be predetermined or entered for the first time, such as the service representative's name, address, billing rate, Zodiac birth sign and/ or other information, preferably automatically via a telephone keypad or via speech recognition. In another 45 embodiment involving computer service assistance, a service representative may specify expertise in hardware matters and another service representative may specify expertise in software matters.

In an alternative embodiment or in a packetized telephony- 50 based embodiment, the service representative is equipped with a cathode ray terminal, a printer or other display and a full keyboard permitting a written query and response and so the "announcement" of step **210** may be a written or a displayed announcement. In a preferred embodiment, however, 55 an exemplary announcement or instructional display provided by either embodiment may include: "Press **1** if you wish to serve one call at a time by yourself. Press **2** if you wish to confer with a second conferee on each incoming call. Press **3** if you wish to confer with two other conferees on each incoming call requesting service . . . " and so on. When the service representative has a computer mouse, the mouse may be used to input selection criteria.

Flow continues to step **220** where a preference selection is made. Steps **210** and **220** are repeated until log-in is complete. 65 Once the responses to the queries of step **210** are registered by DTMF or other data receiver **120** and reported to controller

110, ARU **135** may provide a validity check for the entered data and provide audible feedback for selections. Then, ARU **135** may further request, "Do you have a preference for the second conferee? If so, enter by pressing keys of the keypad the first several letters of the preferred conferee's last name." Of course, a psychic twin would enter their own last name and their twin could be immediately identified via a memory look-up in memory **115**. Audible or visual confirmation/feedback that the choice has been accepted may be provided, in additional to error algorithms can be provided, as necessary, for correcting an erroneous choice made by a service representative.

In the log-in process of FIG. 2, the various announcements and responses of steps 210 and 220 can be varied depending on the desired service to be performed. Moreover, the result may vary. In one scenario, there may be an availability queue of available service representatives willing to confer with a caller individually or with other conferees. In other words, the service representative may be willing to accept any request for services. In other embodiments, there may be availability queues formed in memory 115 for individual service representative calls, dual or twins calls, triplets or three service representative calls and so on. Or there may be a combination of such queues depending on the embodiment. Consequently, in its simplest embodiment the present invention involves the service representative logging in to a dual service representative availability queue so that upon receiving a call to a special dual service representative telephone number, the next two service representatives that are available in the dual service representative availability queue are automatically and connected practically simultaneously to the caller.

The result of the log-in process is shown as step 230, that is, the service representative is entered into memory 115 in one or more service representative availability queues as a memory table. Of course, when a service representative takes a call and is connected with a caller (and maybe one or more other service representative conferees), the appropriate availability table in memory 115 records a "busy" status for the service representative, as signaled by controller 110. Moreover, the service representative has recorded the preferred type of call that the service representative is willing to accept (for example, individually, with another service representative conferee, and the like) and certain other preferences, such as their own Zodiac sign, the day, month, year of birth, gender or other information that is useful for arranging a call. Some or all of this information may be preserved in memory 115 depending on the service offered. Over time, information such as the number, type, caller identities, caller preferences and the like of calls handled by each respective service representative may be recorded in memory 115 and associated with the service representative for assisting in providing better caller service, and for providing salary or other compensation to the service representatives.

FIG. 3 shows a flowchart for processing a call received from a circuit-switched telecommunications network or from a packet-switched computer network, such as the Internet, for a service representative according to the present invention. A caller may define certain parameters for the ACD (Internet router) system of FIG. 1 to follow when connecting the caller to at least one service representative. At step 305, a caller to the psychic network service calls an 800 or a 900 telephone number for the service bureau on line 110-1 or series of trunks 110-1 and 110-2, or accesses the service bureau using an Internet address. A second line or Internet address or a series of trunks or Internet addresses may be separately provided for a twins service. In such an instance, the caller may be immediately passed to step 320 and the input data registered including, but not limited to, the calling telephone number, address and billing information of the caller, or Internet address of the caller.

According to the present invention, call limiting, call blocking and fraud control checking is performed automatically at this stage. For example, call limiting criteria may be established for protecting callers against excess usage and billing, such as two calls per day, 40 call minutes per day, 50 call minutes per week, 85 call minutes per month, and/or an amount of money spent by a caller during a predetermined 10 period of time. A caller is queried in a database for determining how frequently and, for each respective call, how long the caller was connected for determining whether any individual or combination of the call limiting criteria have been exceeded. When any call limiting criteria has been exceeded, 15 the caller may receive a message thanking the caller for their previous calls, and possibly blocking or limiting the duration of the present call.

Regarding call blocking based on input data and certain negative databases, the calling telephone number (or Internet 20 address), the first several digits of the address or apartment number and/or the zip code of the caller that have been entered by way of a telephone keypad may be matched against the calling telephone number (obtained via ANI), the originating Internet address (obtained via packetized data) 25 and/or credit card data so that a security breach is pre-identified. The comparison of the user-entered first several digits of a street address or apartment number and/or zip code against credit card data downloaded or prestored from a credit agency or a bank is referred to herein as an address verification 30 system (AVS). The caller may be asked to explain any discrepancy and/or the call is blocked. The calling telephone numbers (obtained via ANI and by caller entry) or Internet addresses (obtained via packetized data and by caller entry) can be checked against each other and against telephone 35 number/Internet address negative databases that identify pay phones, prisons, schools, selected commercial establishments, and other institutions or locations of telephones or Internet access devices from which calls may be blocked at switch (router) 100. 40

A voiceprint of the caller's voice may be recorded via message unit 135 and converted to digital form for comparison against a voiceprint database for insuring the validity of the identity of the caller. The caller's name may be spelled into the system via a telephone or intelligent terminal keypad, 45 and compared against a card-holder or account name as a security check. When the caller is making a packet-switched call, a voiceprint, a fingerprint image and/or a portrait image can be used for insuring the validity of the identity of the caller. At least, via AVS, the address of the caller, entered by 50 telephone keypad, can be matched against the address of the card holder or on an account that is pre-stored and downloaded from a credit agency or a bank. In an alternative embodiment, a non-service representative may assist, supplement or replace an automated system regarding call limiting, 55 call blocking, fraud control, collecting form of payment information and obtaining payment authorization.

At step 325, the caller is identified to be served by at least one service representative and at step 330 immediately connected to an identified service representative listed in the 60 availability queue of service. Once it has been determined that call blocking, call limiting and fraud control criteria have not been exceeded, a caller is immediately collected and served by at least one service representative listed in the service representative availability queue.

In a further preferred embodiment of the present invention, steps 310 and 315 performed repeatedly in a manner that is

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similar to the way the service representative logs in, as per FIG. 2, until the caller logs in. For example, at step 310, an announcement is played welcoming the caller to the service bureau, such as to a psychic network service. When the service representative queue is relatively full, the announcement can indicate that the caller's call is important and connection to a service representative be momentarily delayed. Based on controller calculated average call durations and other queuing theory calculations, controller 110 may even indicate an expected waiting time for the caller and, in the meanwhile, will begin to record certain service and service representative preference information.

While the caller is waiting for a service representative, the caller may be provided with their horoscope or other information of interest to the caller until a service representative is available to conduct a session with the caller. For example, a caller may enter the month, day and year of birth, their gender and service preference (such as one or more service representative conferees). This information may be used for providing a personalized horoscope or other information that may be of interest to the caller while the caller is waiting for a service representative.

As steps 310 and 315 are repeated, controller 100 variously calls into play ARU 135, ANI 125 and DTMF receiver/decoder 120, as necessary. Controller 100 may query a database for determining billing arrangements, among other things, such as whether the caller has used the service before, how the caller has paid in the past, what preferences and data was accumulated at that time, and bring such data that is useful for this call to active memory.

Once the call has been accepted and the caller has logged in, the caller's input data is registered into active memory 115 at step 320. The registered data may include, among other things, the caller's name, address, zip code, telephone number, credit card type and number, bank name and account number and billing data, service preference, and data that may be used for matching the caller with service representative data. For example, the caller's sign of the Zodiac, determined from an entered birth date, or separately entered, may be matched with similar psychic service representative information before the call is initiated.

Identification of service representatives at step 325 then may be as simple as selecting the next available service representative from an availability queue and associating the selected service representative with a caller. In a dual service representative call (twin service), the next two available service representatives are selected from the availability queue for a call, and so on. Service representative selection can be more complicated when, for example, a pair of psychic twins is required to be identified and selected. Other criteria for selecting a service representative can include gender, sign of the Zodiac and other preference data. In all such criteria selection and matching of preferences, step 325 is crucial for obtaining the best service for a particular caller. A trade-off is that there may not be as many available service representatives having desired criteria, so that a delay in arranging a call may be lengthened or impossible to accomplish at a particular time. Announcement 310 may be adaptively used for describing for the caller the real choices that the caller is able to make at a particular time under control of controller 110. The caller may be offered additional choices within the same network, or through prior arrangement with another psychic counseling network service, the caller may be transferred to an available psychic representative associated with another psychic network service for receiving service.

Once the service representative goes off-hook, the caller is billed for the call. Consequently, at step 335, all caller and service representative data is logged in along with time of day and date for calculating call duration in minutes and for billing, and service representative compensation data logging. More specifically, a caller is billed for the duration of time beginning when the first service representative goes 5 off-hook or begins an Internet telephony session until the last service representative goes on-hook or terminates the Internet telephony session. Individual time logs are maintained for the caller (call duration) and each service representative (service duration). For example, when the first service representative hangs up, the system will update the database with the first service representative's connect time, time of day and the date. When the second or final service representative hangs up, the caller is billed for the total call time and the second service representative's connect time, time of day and date are 15 logged accordingly.

Once the conferees (including the caller) have completed a call, step **340** is entered. On-hook conditions and the timeof-day are registered by controller **110** so that the duration of the call can be calculated. Each of the service representatives 20 are returned to their respective availability queues until they choose to log off by following a log-off process that is complimentary to the log-in process of FIG. **2**, or become unavailable by accepting a service call. Once a service representative logs in, controller **110** anticipates that the next call to the 25 service bureau is a log-off call and will provide an appropriate sequence of announcements and obtain responses for logging off. The time of day may be recorded to determine how long the service representative has been on the job.

When the counseling service is provided for a fee, it is 30 anticipated according to the principles of the present invention that callers may be offered a variety of ways to pay for the services offered. Some methods of payment, such as debit cards, bank checks or drafts, smartcards, electronic wallets (e-wallets), and major credit cards, are more creditworthy 35 than other methods of payment. Other forms of payment contemplated by the present invention include billing to a telephone number, a cable television account number, a utility service account, or an Internet service provider (ISP) account number. A caller enters a preferred form of payment in 40 response to a request via ARU unit 135. A caller may receive preauthorization using these credit arrangements in real time, even prior to the counseling service and, consequently, may realize a discount according to the present invention, which can induce the caller to use a method of payment that is 45 preferred by the service vendor. Payment method and billing arrangements are typically agreed upon after the call limiting, call blocking and fraud control features previously described, and may be agreed upon in advance of the call or prior to conclusion of the call. Preferably, such arrangements are 50 agreed upon automatically by using message unit 135 and data input 120, as described above, when modem 140 is used for obtaining the payment authorization from a bank or credit agency.

FIG. **4** shows a flow diagram for a real-time billing system 55 for circuit-switched and packet-switched calls in accordance with the principles of the present invention. At block **401**, the initial fraud control are activated, which can include verifying whether the caller is calling from a location that matches the originating telephone number of the call, limiting the number 60 and duration of calls made during a certain time period and/or limiting the amount of money a caller spends on service representative calls in a predetermined time period.

When a call is received from a circuit-switched telecommunications network, the system prompts the caller at block 65 **401** to enter the caller's telephone number to verify that the caller is calling from a location that matches the telephone

number from a displayed ANI. When the entered telephone number does not match the number forwarded by the ANI, the caller may be disconnected or the caller may be given another chance to reenter the correct telephone number. When the call is received from a packet-switched network, the initial fraud control of block 401 verifies that the caller is calling from an Internet address that matches the Internet address contained in the packetized telephony data received with the call. The caller is similarly prompted to enter the caller's Internet address or a unique identification associated with the caller and/or terminal equipment. When the entered Internet address (unique identification) and the Internet address (unique identification) forwarded in the packetized telephony data do not match, the caller may be disconnected or the caller may be given another chance to reenter the correct Internet address or unique identification.

When the originating telephone number or Internet address (unique identification) entered by the caller is verified to match the ANI or Internet address (unique identification) forwarded with the call, the initial fraud control of block 401 verifies that the caller's telephone number or Internet address (unique identification) is not stored in a negative database of known bad telephone numbers and/or Internet addresses (unique identifications). The negative database can be located locally in memory 115 or located remotely and accessed via a modem or over the Internet. Telephone numbers and/or Internet addresses (unique identifications) stored in the negative database result from insufficient payment of a telephone bill or a credit card charge, or a caller's refusal of payment relating to a disputed charge from a previous service representative call. The present invention, however, is not limited by the above-mentioned negative database satisfying the criteria mentioned above (storing telephone numbers and/or Internet addresses (unique identifications) having disputed charges or insufficient payments with respect to a service representative call). The negative database used at this stage of the initial fraud control of the present invention may be a shared database that stores telephone numbers and/or Internet addresses (unique identifications) of callers who have credit problems with other types of telephone and/or Internet-based ordering/payment systems.

The present system also checks to ensure that calls are not made from locations in which the telephone number and/or an originating Internet address (unique identification) cannot be forwarded to, for example, a Caller ID or other device that displays and/or records the telephone number or Internet address (unique identification) of the incoming call. In particular, certain parts of the United States cannot read ANIs and calls originating from telephone numbers located in these areas are detected by the initial fraud control of block **401**. The present invention is also capable of detecting calls from particular institutions and communication devices, such as cellular telephones, numbers associated with a PBX system, governmental facilities, pay telephones, prisons, hospitals, schools, selected commercial establishments, etc.

The above-described initial fraud controls are illustrative examples. Other fraud controls will be apparent to those skilled in the art, thus the invention is not limited to the fraud controls described above. In general, the system can be designed to prevent any unwanted telephone numbers from entering the system.

When the originating telephone number or Internet address (unique identification) entered by the caller is verified to match the ANI or Internet address (unique identification) forwarded with the call and the originating telephone number or Internet address (unique identification) is not contained in the negative database, the initial fraud control of block **401** checks that the caller has not exceed a permissible number or duration of calls the caller has made during a predetermined period of time, or an amount of money the caller has spent during a predetermined period of time by querying a database. For example, a caller may be limited to only two calls per day or two calls per week, and the to duration of calls may be limited so that a caller is allowed to speak with service representatives for a maximum of, for example, 100 minutes per month. The amount of money that a caller can spend can be limited to, for example, an expenditure of \$100 per month. The database containing this type of information can be part of or separate from the negative database, and can be a shared database.

Calls that fail the initial fraud control of block **401** are forwarded to block **410** where the call is processed to determine what the next course of action will be. According to the invention, calls can be blocked, temporarily blocked or limited. Blocked calls are permanently prohibited from connection with a service representative. A message may be played for a blocked call that advises the caller to stop calling because the calling number or Internet address has been blocked. Examples of potentially blocked calls include calls from telephone numbers located in a negative database or calls from localities where an ANI cannot be forwarded. Similarly, Internet telephony calls originating from Internet addresses (unique identification) that are not properly forwarded with packetized telephony data can be blocked calls.

A limited call prohibits a caller who has exceeded an allotted number of calls, an allotted duration (in minutes, hour or days) of calls or an allotted expenditure amount during a certain period of time from being connected to a service representative. The limitations placed on a given caller may be removed once the caller has satisfied criteria for removing 35 the limitation. A temporarily blocked calls can include a call in which a telephone number requested by a service representative does not match an ANI number displayed or received packetized telephony data. The caller may be able to reenter the correct telephone number or Internet address 40 (unique identification), or may be allowed to call again for correctly entering the caller's telephone number or Internet address (unique identification). Therefore, the caller is temporarily blocked from being connected to a service representative. When any of the call limiting, call blocking, or tem- 45 porarily call blocking features is activated, the call is disconnected.

When the call successfully passes the initial fraud control of block **401**, the call then advances to block **402** where the form of payment that will be used to pay for the call to a 50 service representative is solicited. The caller is prompted by, for example, a computer-activated voice or by an operator (a non-service representative), to indicate the form of payment information the caller wishes to use. The form of payment can be cash, debit cards, check or electronic draft, electronic 55 funds transfer, credit, major credit card, electronic wallet and the like. For this particular embodiment of the invention, the preferred form of payment involves credit cards, debit cards and the like.

Alternatively, in situations when the caller has previously 60 called into the service, the form of payment information can be automatically accessed from a form-of-payment/credit database in a well-known manner based on the ANI and/or other information that has been provided by the caller. Preferably, the form-of-payment/credit database is stored locally, 65 but can also be remotely located. The previously-used form of payment information stored in the form-of-payment/credit

database is presented to the caller in a well-known manner as a possible selection by the caller for payment of the current call.

The operator or computer-activated voice may offer the caller a discount when the form of payment selected by the caller is convenient for the billing system. A further discount may be given when the caller is a frequent caller who has not exceeded the caller's allowance for prescribed calls or expenditure amount. Of course, any other form of preferential treatment may also be initiated. In the exemplary embodiment described in FIG. 4, the caller provides the form of payment information to the operator or inputs this information via a telephone keypad or keyboard. The caller can be requested to enter or supply information such as credit card or debit card numbers, the card expiration date, address including zip code, billing address, date of birth, driver's license number, etc. When the form of payment is not successfully communicated to the operator or successfully entered by the caller via the telephone keypad or keyboard, the call is disconnected. Alternatively, the caller may be temporarily blocked and/or given another chance for entering the correct information. The caller may also be completely blocked from calling the system again.

When the information is successfully communicated or entered, flow continues to block **404** where additional fraud control is implemented. Such additional fraud control may, for example, include comparing information given by the caller against information stored in a database of information related to each respective caller, and/or verifying that the caller's credit card or debit card number has not been in a negative database for delinquent payment. The information stored in this database can be part of or separate from the negative database of call originating telephone numbers and/ or Internet addresses (unique identifications), and can be a shared database.

The information entered or communicated by the caller is also used for determining whether the caller has not exceed a permissible number or duration of calls the caller has made during a predetermined period of time, or an amount of money the caller has spent during a predetermined period of time by querying a database. The queried database may be the same database used in step **401** for determining whether the caller has exceeded any of the same criteria.

When a call fails the additional fraud control of block 404, the call is forwarded to block 410 where the call can be selectively blocked, temporarily blocked, or limited. A blocked call includes a call in which a credit card or debit card has expired or is invalid. A limited call includes a call in which a credit card or a debit card exceeds the monthly/weekly allocations of calls or exceeds the time allowance for a certain period of time. A temporarily blocked call includes a call in which the zip code or other information supplied by the caller does not match the appropriate information stored in a database. Moreover, the system can be designed so that calls classified as blocked calls can also be classified as temporarily blocked calls when the system allows a caller to supply information, such as the correct expiration date of a charge card. When the caller is allowed to make payment to a lending institution in order to validate the credit or debit card, a call can be classified as temporarily blocked.

According to one embodiment of the present invention, when the call passes the additional fraud control, the credit card account information or the debit card account information is forwarded at block **405** to a remote site for authorization. Remote sites used for authorization may, for example, include a credit bureau, a banking institution, a third-party biller, or the like. The remote site checks to ensure that the credit card or debit card is valid. When the card is valid, a predetermined amount of money is charged against the credit or debit card account at block **406**. According to another embodiment of the present invention, when the call passes the additional fraud control, the credit card account information 5 or the debit card account information is forwarded to a local database to ensure that the credit card or debit card is valid. When the card is valid, a predetermined amount of money is charged against the credit or debit card account at block **406**.

The predetermined amount of money charged against the 10 credit account can be performed in several ways. For example, a portion of the caller's available line of credit for the account equal to the predetermined amount can be authorized or set aside for the purpose of making the call. Alternatively, the account may be debited by the predetermined 15 amount. In any event, the predetermined amount of money charged to the account is preferably greater than the probable charge for the telephone call for insuring that the charges incurred during the call will be paid. When the predetermined charge to the account is approved or denied, the remote site 20 sends an approval or denial notification back to the system at block 406. When the remote site authorizes the call, the call is forwarded to a service representative, such as a psychic counselor. When the call is not authorized, the call is either blocked or temporarily blocked until information regarding the credit 25 bureau or the banking institution is settled by the caller.

At block **407**, the call is redirected to a service representative and, at this point, the billing processes begin, as shown in block **408**. The call is billed from the time the call is redirected to one or more service representatives and to the time when ³⁰ the last service representative hangs up. The caller is billed in real time for only the actual minutes that the caller is connected to a service representative.

When the call is terminated, the system calculates the total billable amount for the call. The system then sends the bill- 35 able amount to the remote site at block **410**. The system can also send the credit card or debit card account information or some other identifying information along with the billable amount to the remote site. The remote site then reverses the previous charge of the predetermined amount to the account 40 and a new charge for the actual billable amount of the call is charged to the account at block **408**.

This reverse authorization routine can be performed in several ways and the invention is not limited to the following examples. First, the initial authorization to set aside the pre- 45 determined amount of available credit is reversed, thereby returning the amount that was set aside to the available credit line. A second authorization is then performed wherein a portion of the available credit line that is equal to the actual cost of the call is set aside. In another embodiment of the 50 invention, the account may receive a credit in the amount of the predetermined amount to negate the initial charge of the predetermined amount. A new charge in the amount of the actual cost of the call is then made to the credit card account. Alternatively, the account may just receive a credit in the 55 amount of the difference of the predetermined amount initially set aside minus the actual billable amount of the call. Furthermore, when the caller is not connected to a service representative and the billing has not begun before the call is terminated, the caller is not charged for the call and the initial 60 charge is completely reversed. When the credit account information relates to a checking account or an electronic funds transfer, the reverse authorization feature of the present invention is, of course, not used.

The present invention is adaptable for providing video 65 conferencing services to callers equipped with video cameras. Moreover, the service representatives may not necessar-

ily need to depend on central controller **110** for database maintenance services regarding caller and service representative data. Such data may be maintained and updated within personal computers at the service representative's premises. Other modifications and enhancements to the present invention may be adaptively made for providing other services than that described, such as medical counseling, suicide hot-line and other services.

The present invention also provides for a call-out feature in which selected callers are called by the system in a wellknown manner. Once the call has been connected to the caller, message unit 135 plays an announcement for the call recipient offering services and/or goods that can be accepted. If the offer of services and/or goods is accepted by the call recipient, message unit 135 provides audio prompts querying the call recipient for a form of payment. Accordingly, a previouslyused form of payment can be accessed from a form-of-payment/credit database for providing a possible selection by the call recipient. The fraud control features of the present invention can optionally be used in conjunction with the querying for the form of payment Accessing the form-of-payment database When the form of payment is selected, the fraud controls relating to the form of payment provided by the present invention are then initiated before the services and/or goods are delivered.

FIG. 5 shows a schematic block diagram of a system 500 for billing a communication session conducted over a packetized digital data computer network 501, such as the Internet, according to the present invention. In FIG. 5, a plurality of Internet Service Providers (ISPs) 502 are connected to the Internet 501 for providing access to the Internet 501 and to resources connected to the Internet 501. Each of a plurality of user terminals 503 are connected to the Internet 501 through an ISP 502. Typically, a user terminal 503 uses an automatic dialing modem to create a circuit-switched data link to an ISP 502. Alternatively, a user terminal 503 can access an ISP 502 through a cable link or a high-speed digital link. The ISP, in turn, creates a packet-switched data link to a desired address over the Internet 502 in a well-known manner. A plurality of servers, which may comprise routers, are also connected to the Internet 501 for providing access to web pages and other data in a well-known manner. Only three such servers 504, 505 and 506 are shown in FIG. 5 for clarity.

Server 504 is connected to a computer system 507 that is used for providing a service representative-based service, for example, a psychic counseling network service. Other computer systems (not shown) can also be connected to server 504. Preferably, though, computer system 507 is the only computer system connected to the Internet 501 through a server 504 so that users requesting service receive an optimum level of performance. A plurality of service representative terminals 508 can be connected locally to computer system 507 so that service representatives can interface with users for counseling communication sessions from a centrally-located place. Additionally or in the alternative, a service representative can be located remotely from computer system 507 through a link over the Internet 501. For example, user terminals 503a and 503b can be operated by service representatives that are associated with the representativebased service provided through computer system 507 in a manner that appears to be transparent to users requesting service.

FIG. **6** shows a flowchart for actuating and entering a service representative into a service representative availability queue using a communication session over a computer network according to the present invention. Such a communication session can be a data-only session or a multimedia

session that includes any combination of audio, video and data. At step 600, a service representative contacts the service bureau at computer system 507 over the Internet 501 for indicating an availability for providing service. At step 610, the service representative receives a log-on page requesting, 5 for example, the service representative to identify certain choices and preferences for recording in memory of system 507 that are similar to the choices presented in connection with the logging in sequence of FIG. 2. Preferences may be predetermined or entered for the first time, such as the name and address of the service representative, billing rate, Zodiac birth sign and/or other information. Typically, at this time, a time of day and date is recorded in the memory of system 507 logging the time and date the service representative has offered to begin servicing users. When the service represen- 15 tative is directly connected to computer system 507, the service representative need only to initiate a log-on procedure, as opposed to logging into an ISP and initiating a communication session with system 507.

Flow continues to step **620** where the service representa- 20 tive enters a preference selection and sends the preference selection information to system **507**. Steps **610** and **620** are repeated until log-in is complete. Once the responses to the queries of step **610** are registered, system **507** may provide a validity check for the entered data, and provide an audible 25 and/or visual feedback for selections. System **507** may then send additional log-in query pages, such as whether the service representative desires to work with one or more conferees. Feedback confirmation that the choices have been accepted by system **507** may be provided in addition to error 30 algorithms provided for correcting erroneous choices made by a service representative, as necessary.

In the log-in process of FIG. 6, the various query pages and responses of steps 610 and 620 can be varied depending on the desired service that is to be performed. Moreover, the 35 result may vary. In one scenario, there may be an availability queue of available service representatives willing to confer with a user individually, with other conferees or in a chatroom-type of setting. In other words, the service representative may be willing to accept any request for services. In other 40 embodiments, there may be availability queues formed in the memory of system 507 for individual service representative communication session, dual or twins communication sessions, triplets or three service representative communication sessions, and so on. There may be a combination of such 45 queues depending on the embodiment. Consequently, in its simplest embodiment, the present invention involves the service representative logging in to a dual service representative availability queue such that on receiving a request for a communication session at a special dual service representative 50 website or web page, the next two service representatives that are presently available in the dual service representative availability queue are automatically connected to the user.

The result of the log-in process is shown as step **630**, that is, the service representative is entered into the memory of sys-55 tem **507** in one or more service representative availability queues as a memory table. Of course, when a service representative accepts a communication session and is connected with a user, and perhaps one or more other service representative conferees, the appropriate availability table in the 60 memory of system **507** records a "busy" status for the service representative. Moreover, the service representative has signaled and recorded their preferences for the type of communication session that the service representative is willing to accept (for example, individually, with one or more service 65 representative conferees or in a chatroom-type environment) and certain other preferences, for example, their own Zodiac 20

sign, the day, month, year of birth, gender or other information that is useful for arranging a communication session. Some or all of this information depending on the service offered may be preserved in the memory of system **507**. Over time, information such as the number, type, user identities, user preferences and the like of communication sessions accepted by each respective service representative may be recorded and associated with the service representative for assisting in providing better user service, and for providing salary or other compensation to the service representatives.

FIG. 7 shows a flowchart for processing a service representative communication session, whether a data-only session or a multimedia session, according to the present invention. Such a communication session can be a data-only session or a multimedia session that includes any combination of audio, video and data. At step **705**, a potential user of the service bureau provided at computer system **507** accesses a log-in page at the service bureau web address. A second web address or series of web pages may be separately provided for accessing a twins service. In such an instance, the user may be immediately passed to step **720** and the input data registered including, but not limited to, the Internet address of the user, the physical address and billing information of the user.

According to the present invention, communication session limiting, session blocking and fraud control checking is performed automatically at step 710. For example, arbitrary communication session limiting criteria may be established, such as two sessions per day, 40 session minutes per day, 50 session minutes per week, 85 session minutes per month and/or an amount of money spent by a user during a predetermined period of time for communication session services for protecting user against excess usage and billing. A user is queried in a database for determining how frequently and, for each session, how long the user has been connected for determining whether any individual or combination of session limiting criteria have been exceeded. When any session limiting criteria has been exceeded, the user may receive a message thanking the user for past sessions, but possibly blocking or limiting the duration of the present session.

Regarding session blocking based on input data and certain negative databases, the Internet address initiating the session, the first several digits of the address or apartment number and/or the zip code of the user that have been entered by the user may be matched against the Internet address (obtained via packetized data when the session is initiated) and/or credit card data so that a security breach is pre-identified. The comparison of the user-entered first several digits of a street address or apartment number, and/or zip code against credit card data downloaded or prestored from a credit agency or a bank is an address verification system (AVS). The user may be queried to explain any discrepancy and/or the session is blocked. The Internet address (or other unique address) from where the session is initiated (obtained via packetized data) can be checked against the Internet address (or unique address) entered by the user and against Internet address and telephone negative databases identifying pay phones, prisons, schools, selected commercial establishments, and other institutions or locations of terminals and/or telephones from where communication sessions may be blocked.

If the session is a multimedia session involving voice communications, a voiceprint of the user's voice may be recorded by system **507** for comparison against a voiceprint database for insuring the validity of the identity of the user. The user's name may be input and compared against a card-holder or account name as a security check. Additionally, a fingerprint image and/or a portrait image can be used for insuring the validity of the identity of the caller. At least, via AVS, the address of the user, entered through a keyboard, can be matched against the address of the cardholder or on an account that is pre-stored and downloaded from a credit agency or a bank **511**. In an alternative embodiment, a non-service representative may assist, supplement or replace an ⁵ automated system in regard to session limiting, session blocking, fraud control, collecting form of payment information and obtaining payment authorization.

At step **725**, the user is identified to be served by at least one service representative and at step **730** immediately connected to an identified service representative listed in the availability queue of service for the type of service requested by the user, such as an individual service representative consultation, a consultation with a plurality of service representatives, a chatroom environment, etc. Once session blocking, session limiting and fraud control criteria have not been exceeded, a user is immediately connected and served by at least one service representative listed in the service representative availability queue.

In a further embodiment of the present invention, steps 710 and 715 are repeatedly performed until the user logs in a manner that is similar to the way the service representative logs in using a communication session, as per FIG. 6. For example, at step 710, a welcome announcement to the psychic 25 network service is sent to the user. When the service representative queue is relatively full, the announcement may indicate that the user session is important and connection to a service representative be momentarily delayed. Based on a calculated average session durations and other queuing 30 theory calculations, system 507 may send a message indicating an expected waiting time for the user and, in the meanwhile, will begin to record certain other service and service representative preference information. For example, as with the telephony-based embodiment of the present invention of 35 FIGS. 1-4, a user may enter the month, day and year of birth, their gender and service preference (such as one or more service representative conferees, or a chatroom environment).

As steps **710** and **715** are repeated, system **507** may query 40 a database for determining billing arrangements, among other things, such as whether the user has used the service before, how the user has paid in the past, what preferences and data was accumulated at that time, and bring such data that is useful for the session to active memory. 45

Once the communication session has been accepted and the user has logged in, of course, the user's input data is registered into the memory of system **507** at step **720**. The registered data may include, among other things, the user's name, address, zip code, telephone number, credit card type ⁵⁰ and number, bank name and account number and billing data, service preference, and data that may be used for matching the user with service representative data. For example, the user's sign of the Zodiac, determined from an entered birth date or entered separately may be matched with similar psychic service representative information before the session is initiated.

When the service representative queue is relatively full and/or when a user must wait to connect to a particular service representative, system **507** can send pages of information to 60 the user that have been customized for the user or may be of interest to the user. For example, while a user is waiting, horoscope information or an astrological chart (personalized for the user based on data input by the user) can be sent to the user for the user's information and entertainment. Another 65 example is to send marketing information, such as a information regarding products and/or services available from the 22

service bureau, to the user so that the user is entertained while waiting for a service representative.

Identification of service representatives step 725 then may be as simple as selecting the next available service representative in an availability queue and associating the selected service representative with a user. In a dual service representative session (twin service), the next two available service representatives are selected from the availability queue for a session, and so on. Service representative selection can be more complicated when a pair of psychic twins is required to be identified and selected. Other criteria can include gender, sign of the Zodiac and other preference data. In all such criteria selection and matching of preferences, step 725 is crucial for obtaining the best service for a particular user. A trade-off is that there may not be as many available service representatives having desired criteria, so that a delay in arranging a session may be lengthened or impossible to accomplish at a given time. The announcement message of step 710 may be adaptively used for describing for the user the 20 real choices the user is able to make at a particular time. The user may be offered additional choices within the same network, or through prior arrangement with another psychic counseling network service, the user may be transferred to an available psychic representative associated with another psychic network service for receiving service. Further, system 507 can, as previously mentioned, send pages of information to the user that have been personalized for the user or may be of interest to the user, such as horoscope, astrological and/or information regarding other products and services that are available. When the selected service representative(s) is (are) available, system 507 connects the user to the service representative(s).

Once all of the selected service representatives are connected to the session, the user is billed for the session. Consequently, at step 735, all user and service representative data is transmitted to system 507 and logged in along with time of day and date for calculating session duration in minutes and for billing, and service representative compensation data logging. Specifically, a user is billed for the duration of time beginning when the first service representative goes is connected to the session until the last service representative terminates the session. Individual time logs are maintained for the user (session duration) and each service representative (service duration). For example, when each service representative disconnects or terminates from the session, the respective service representative's terminals transmit the service representative's connect time, disconnect time, time of day and date to system 507. In the situation when a user connects to a chatroom environment, the user is billed for the duration of time when the user first connects to the chatroom until the time the user disconnects from the chatroom.

Once the conferees (including the users) have completed a session, step 740 is entered and a total time for the communication session is determined for billing the user accordingly. Each of the service representatives are returned to their respective availability queues until they choose to log off by following a log-off process that is complimentary to the log-in process of FIG. **6**, or become unavailable by accepting a service session. Once a service representative logs in, system **507** anticipates that the next communication session to the service bureau from the service representative is a log-off session and will provide an appropriate sequence of announcements and obtain responses for logging off. The time of day may be recorded for determining how long the service representative has been on the job.

When the counseling service is provided for a fee, it is anticipated according to the present invention that users will 10

be offered a variety of ways to pay for the services offered. Some methods of payment, such as debit cards, bank checks or drafts, smartcards, electronic wallets, and major credit cards are more creditworthy than other methods of payment. Other forms of payment contemplated by the present invention include billing to a telephone number, a cable television account number, a utility service account, or an Internet service provider (ISP) account number. A user enters a preferred form of payment in response to a query from system 507. A user may receive preauthorization using these credit arrangements in real time, even prior to the counseling service and, consequently, may realize a discount according to the present invention that can induce the user to use a method of payment that is preferred by the service vendor. Payment method and 15 billing arrangements are typically agreed upon after the session limiting, session blocking and fraud control features previously described, and may be agreed upon in advance of the session or prior to conclusion of the session.

FIG. 8 shows a flow diagram for a real-time billing system 20 for billing a communication session occurring over a computer network according to the present invention. Such a communication session can be a data-only session or a multimedia session that includes any combination of audio, video and data. At block 801, the initial fraud control are activated, 25 which can include verifying whether the user is requesting a communication session from a location that matches the originating Internet address and/or a unique identification requesting the session, limiting the number and duration of sessions made during a certain time period and/or limiting the 30 amount of money a user spends on service representative communication sessions in a predetermined time period.

When a request for a session is received from a user, the system prompts the user at block 801 to enter the user's Internet address or a unique identification to verify that the 35 user is requesting a session from a location that matches the user's Internet address or unique identification associated with the user and/or terminal equipment received with the request for a session. When the entered Internet address or unique identification, and the Internet address or unique iden- 40 tification forwarded in the packetized data do not match, the user may be disconnected or the user may be given another chance to reenter the correct Internet address or unique identification.

When the originating Internet address or unique identifi- 45 cation entered by the user is verified to match the Internet address or unique identification forwarded with the request, the initial fraud control of block 801 verifies that the user's Internet address or unique identification is not stored in a negative database of known bad Internet addresses and/or 50 unique identifications. The negative database can be located in the memory of system 507, and/or remotely located at 509 and accessed over the Internet 501 through server 505. Internet addresses and/or unique identifications stored in the negative database result from insufficient payment of a credit card 55 charge, or a user's refusal of payment relating to a disputed charge from a previous service representative communication session. The present invention, however, is not limited by the above-mentioned negative database satisfying the criteria mentioned above (storing Internet addresses and/or unique 60 identifications having disputed charges or insufficient payments with respect to a service representative session). The negative database used at this stage of the initial fraud control of the present invention may be a shared database that stores Internet addresses and/or unique identifications of users who 65 have credit problems with other types of Internet-based ordering/payment systems.

System 507 also checks to ensure that sessions are not initiated from locations in which an Internet address or a unique identification cannot be forwarded. System 507 is also capable of detecting a communication session initiated from particular institutions and communication devices, such as cellular telephones, numbers associated with a PBX system, governmental facilities, pay telephones, prisons, hospitals, schools, selected commercial establishments, etc.

The above-described initial fraud controls are illustrative examples. Other fraud controls will be apparent to those skilled in the art, thus the invention is not limited to the fraud controls described above. In general, the system can be designed to prevent any unwanted Internet addresses and/or unique identifications from entering the system.

When the originating Internet address or unique identification entered by the user is verified to match the Internet address or unique identification forwarded with the session request, and the originating Internet address or unique identification is not contained in the negative database, the initial fraud control of block 801 checks that the user has not exceed a permissible number or duration of sessions the user has made during a predetermined period of time, or an amount of money the user has spent during a predetermined period of time by querying a database. For example, a user may be limited to only two sessions per day or two sessions per week, and the duration of sessions may be limited so that a user is allowed to communicate with service representatives for a maximum of, for example, 100 minutes per month. The amount of money that a user can spend can be limited to, for example, an expenditure of \$100 per month. The query can be based on identification information associated with the user, such as the Internet address of the user, a unique identification of the user, a driver's license and/or social security number of the user, the user's mother's maiden name, a password and/or a digital certificate associated with the user. The database containing this type of information can be part of or separate from the negative database, and can be a shared database.

Sessions that fail the initial fraud control of block 801 are forwarded to block 810 where the session is processed to determine what the next course of action will be. According to the invention, sessions can be blocked, temporarily blocked or limited. Blocked sessions are permanently prohibited from connection with a service representative. A message may be sent to a user for a blocked session that advises the user to stop requesting a session because the originating Internet address or unique identification has been blocked. Examples of potentially blocked sessions include sessions originating from Internet addresses and/or unique identifications that are not properly forwarded with packetized data.

A limited session prohibits a user who has exceeded an allotted number of sessions, an allotted duration (in minutes, hour or days) of sessions or an allotted expenditure amount during a certain period of time from being connected to a service representative. The limitations placed on a given user may be removed once the user has satisfied criteria for removing the limitation. A temporarily blocked session can include a session in which an Internet address or a unique identification does not match the received packetized data when the session is requested. The user may be able to reenter the correct Internet address or unique identification, or may be allowed to request another session for correctly entering the user's Internet address, unique identification of other user identification information. Therefore, the user is temporarily blocked from being connected to a service representative. When any of the session limiting, session blocking, or temporary session blocking features is activated, the request is terminated.

When the session successfully passes the initial fraud control of block 801, the session then advances to block 802 where the form of payment that will be used to pay for the session to a service representative is solicited. At step 802, the user is prompted by, for example, a page that queries the user 5 for the form of payment information the user wishes to use. The form of payment can be cash, debit cards, electronic draft or check, electronic funds transfer, credit, major credit card, electronic wallet and the like. This embodiment of the invention, however, involves credit cards, debit cards and the like. 10

Alternatively, in situations when the user has previously accessed the service, the form of payment information can be automatically accessed from a form-of-payment/credit database in a well-known manner based on the user identification and/or other information that has been provided by the user or 15 through other well-known techniques, such as a cookie. Preferably, the form-of-payment/credit database is stored locally, but can also be remotely located. The previously-used form of payment information stored in the form of payment/credit database is presented to the user in a well-known manner as a 20 possible selection by the user for payment of the current session.

System 507 may offer the user a discount when the form of payment selected by the user is convenient for the billing system. A further discount may be given when the user is a 25 frequent user who has not exceeded the user's allowance for prescribed sessions. Any other form of preferable treatment may also be initiated. In the exemplary embodiment described in FIG. 8, the user provides the form of payment information and sends the information to system 507 in a 30 well-known manner. The user can also be requested to enter or supply information, such as a checking account number, credit card or debit card numbers, the card expiration date, address including zip code, billing address, date of birth, driver's license number, social security number, a password, 35 a digital certificate, mother's maiden name, etc. When the form of payment is not successfully communicated to system 507 by the user, the session is disconnected. Alternatively, the user may be temporarily blocked and/or given another chance for entering the correct information. The user may also be 40 completely blocked from accessing system 507 again.

When the information is successfully communicated or entered, flow continues to block 804 where additional fraud control is implemented. Such additional fraud control may, for example, include comparing information given by the user 45 against information stored in a database of information related to each respective user, and/or verifying that the user's credit card or debit card number has not been in a negative database for delinquent payment. The information stored in this database can be part of or separate from the negative 50 database of call originating Internet addresses and/or unique identifications, and can be a shared database.

The information entered or communicated by the user is also used for determining whether the user has not exceeded a permissible number or duration of sessions the user has 55 initiated during a predetermined period of time, or an amount of money the user has spent during a predetermined period of time by querying a database. The queried database may be the same database used in step 801 for determining whether the user has exceeded any of the same criteria.

When a session fails the additional fraud control of block 804, the session is forwarded to block 810 where the session can be selectively blocked, temporarily blocked, or limited. A blocked session includes a session in which a credit card or debit card has expired or is invalid, and/or an address associated with the user, such as a billing address and/or zip code, is different from an address in the database associated with the

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user. A limited session includes a session in which a credit card or a debit card exceeds the monthly/weekly allocations of session or exceeds the time allowance for a certain period of time. A temporarily blocked session includes a session in which the zip code or other information supplied by the user does not match the appropriate information stored in a database. Moreover, the system can be designed so that sessions classified as blocked sessions can also be classified as temporarily blocked sessions when the system allows a user to supply information, such as the correct expiration date of a charge card. When the user is allowed to make payment to a lending institution in order to validate the credit or debit card, a call can be classified as temporarily blocked.

According to one embodiment of the invention, when the session passes the additional fraud control, the credit card account information or the debit card account information is forwarded at block 805 to a remotely located site 511 for authorization. Site 511 can be accessed over the Internet through server 506. Alternatively, site 511 can be accessed via a modem link 512. Remote sites used for authorization may, for example, include a credit bureau, a banking institution, a third party biller such as a telephone service provider, a cable television service provider, a utility service provider, or an Internet service provider, or the like. Remote site 511 checks to ensure that the credit card, debit card or account number is valid. In the situation of a credit card, when the credit card is valid, a predetermined amount of money is charged against the credit or debit card account at block 806. According to another embodiment of the present invention, when the session passes the additional fraud control, the credit card account information or the debit card account information is forwarded to a local database to ensure that the credit card or debit card is valid. When the card is valid, a predetermined amount of money is charged against the credit or debit card account at block 806.

The predetermined amount of money charged against the credit account can be performed in several ways. For example, a portion of the user's available line of credit for the account equal to the predetermined amount can be authorized or set aside for the purpose of completing the session. Alternatively, the account may be debited by the predetermined amount. In any event, the predetermined amount of money charged to the account is preferably greater than the probable charge for the telephone call for insuring that the charges incurred during the call will be paid. When the predetermined charge to the account is approved or denied, remote site 511 sends an approval or denial notification back to system 507 at block 806. When remote site 511 authorizes the session, the session is forwarded to a service representative, such as a psychic counselor. When the session is not authorized, the session is either blocked or temporarily blocked until information regarding, for example, the credit bureau, banking institution, telephone service account, cable television account, a utility service account, or Internet service provider account is settled by the user.

At block 807, the session is redirected to a service representative and at this point, the billing processes begin, as shown in block 808. The session is billed from the time the session is redirected and connected to a service representative or the first of a plurality of service representatives and to when the last service representative terminates or ends the session. The user is billed in real time for only the actual minutes that the user communicates with a service representative. When the user is connected to a chatroom environment, the user is billed from the time that the user is connected to the chatroom until the time the user disconnects from the chatroom.

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When the session is terminated, system 507 calculates the total billable amount for the session. System 507 then sends the billable amount to remote site 511 at block 810. System 507 can also send the credit card or debit card account information or some other identifying information along with the 5 billable amount to remote site 511. Remote site 511 then reverses the previous charge of the predetermined amount to the account and a new charge for the actual billable amount of the session is charged to the account at block 808. Alternatively, the billable amount is sent to a payment authorization 10 database, which can be locally or remotely located.

As with the voice-based embodiment of the present invention, the reverse authorization routine for the computer network-based embodiment of the present invention can be performed in several ways and the invention is not limited to the 15 following examples. First, the initial authorization to set aside the predetermined amount of available credit is reversed, thereby returning the amount that was set aside to the available credit line. A second authorization is then performed wherein a portion of the available credit line that is equal to 20 the actual cost of the session is set aside. In another embodiment of the invention, the account may receive a credit in the amount of the predetermined amount to negate the initial charge of the predetermined amount. A new charge in the amount of the actual cost of the session is then made to the 25 credit card account. Alternatively, the account may just receive a credit in the amount of the difference of the predetermined amount initially set aside minus the actual billable amount of the session. Furthermore, when a user is not connected to a service representative and the billing has not 30 begun before the session is terminated, the user is not charged for the session and the initial charge is completely reversed. When the credit account information relates to a checking account or an electronic funds transfer, the reverse authorization feature of the present invention is, of course, not used. 35

As indicated, the present invention is adaptable for providing multimedia-based conferencing services between users and service representatives that are appropriately equipped. Moreover, the service representatives may not necessarily need to depend on system 507 for database maintenance 40 services regarding user and service representative data. Such data may be maintained and updated within personal computers at the service representative's premises.

The present invention also provides for a feature in which selected users are contacted by the system in a well-known 45 manner, such as by e-mail, offering services and/or goods that can be accepted. Alternatively, a selected user can be contacted by way of a multimedia technique in which particular services and/or goods are offered for purchase. If the offer of services and/or goods is accepted by the user, the system 50 provides audio prompts querying the user for a form of payment. Accordingly, a previously-used form of payment can be accessed from a form-of-payment/credit database and provided as a possible selection by the user. The fraud control features of the present invention can optionally be used in 55 conjunction with the querying for the form of payment.

The fraud control of the present invention can also be used for other forms of e-commerce over a computer network, such as the Internet. Goods and/or other services can be made available for sale to potential customers who access a website 60 using a browser or by way of computer-network telephony techniques. When a user accesses a website using a browser, the ISP through which the user is connecting to the website forwards the Internet address of the user to the accessed website. That is, identification information uniquely-identifying the user is available to the accessed website. Alternatively, a mechanism referred to as a cookie can be used for

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transmitting information between the accessed website and the user that is used for uniquely identifying the user.

A user can browse through different pages at the website and select items for purchase by, for example, placing the items into a virtual shopping cart. Once a user decides to buy the selected items, the user clicks on a purchase button. In response, system 507 enters the fraud control process shown in FIG. 9 and queries the user for the information necessary for avoiding fraud. FIG. 9 shows a flow diagram for a realtime billing system for effecting a sale over a computer network according to the present invention. According to the invention, the entire flow diagram or selected aspects of the embodiment shown by FIG. 9 can be used.

For an e-commerce embodiment of the present invention, the initial fraud control activated at block 901 can include verifying whether the user is purchasing a good and/or service from a location that matches the originating Internet address and/or has a unique identification, and/or limiting a sale amount that can be purchased during a certain time period. When a purchase request is received from a user, the system prompts the user at block 901 to enter the user's Internet address or a unique identification to verify that the user is making a purchase from a location that matches the user's Internet address or unique identification associated with the user and/or terminal equipment received with the purchase request. When the entered Internet address or unique identification, and the Internet address or unique identification forwarded in the packetized data do not match, the user may be disconnected or the user may be given another chance to reenter the correct Internet address or unique identification. Alternatively, a cookie can be used in a well-known manner for gathering specific information that can be used for uniquely identifying a user. In such a situation, the user is then prompted at block 901 to enter information that can be compared to information gathered by use of a cookie.

When the originating Internet address or unique identification entered by the user is verified to match the Internet address or unique identification forwarded with the request, the initial fraud control of block 901 also verifies that the user's Internet address or unique identification is not stored in a negative database of known bad Internet addresses and/or unique identifications. The negative database can be located in the memory of system 507, and/or remotely located at 509 and accessed over the Internet 501 through server 505. Internet addresses and/or unique identifications stored in the negative database result from insufficient payment of a credit card charge, or a user's refusal of payment relating to a disputed charge from a previous purchase of a product and/or service. The present invention, however, is not limited by the abovementioned negative database satisfying the criteria mentioned above (storing Internet addresses and/or unique identifications having disputed charges or insufficient payments with respect to the purchase of a product and/or service). The negative database used at this stage of the initial fraud control of the present invention may be a shared database that stores Internet addresses and/or unique identifications of users who have credit problems with other types of Internet-based ordering/payment systems.

System 507 also checks to ensure that purchase requests are not initiated from locations in which an Internet address or a unique identification cannot be or is not forwarded. System 507 is also capable of detecting a communication session initiated from particular institutions and communication devices, such as cellular telephones, numbers associated with a PBX system, governmental facilities, pay telephones, prisons, hospitals, schools, selected commercial establishments, etc.

The above-described initial fraud controls are illustrative examples. Other fraud controls will be apparent to those skilled in the art, thus the invention is not limited to the fraud controls described above. In general, the system can be designed to prevent any unwanted Internet addresses and/or 5 unique identifications from making purchases.

When the originating Internet address or unique identification entered by the user is verified to match the Internet address or unique identification forwarded with the purchase request, and the originating Internet address or unique iden- 10 tification is not contained in the negative database, the initial fraud control of block 901 checks that the user has not exceed a permissible amount of money the user has spent during a predetermined period of time by querying a database. The amount of money that a user can spend can be limited to, for 15 example, an expenditure of \$100 per month. The query can be based on identification information associated with the user, such as the Internet address of the user, a unique identification of the user, a driver's license and/or social security number of the user, the user's mother's maiden name, a password and/or 20 a digital certificate associated with the user. The database containing this type of information can be part of or separate from the negative database, and can be a shared database.

Purchase requests that fail the initial fraud control of block **901** are forwarded to block **910** where the purchase request is 25 processed to determine what the next course of action will be. According to the invention, purchases can be blocked, temporarily blocked or limited. Blocked purchases are permanently prohibited from completing a sale transaction. A message may be sent to a user for a blocked purchase request that 30 advises the user to stop requesting a purchase because the originating Internet address or unique identification has been blocked. Examples of potentially blocked purchases include sessions originating from Internet addresses and/or unique identifications that are not properly forwarded with pack- 35 etized data.

A limited purchase prohibits a user who has exceeded an allotted expenditure amount during a certain period of time from making a purchase. The limitations placed on a given user may be removed once the user has satisfied criteria for 40 removing the limitation. A temporarily blocked purchase request can include a purchase request in which an Internet address or a unique identification does not match the received packetized data when the purchase is requested. The user may be able to reenter the correct Internet address or unique iden- 45 tification, or may be allowed to request another purchase for correctly entering the user's Internet address, unique identification of other user identification information. Therefore, the user is temporarily blocked from being connected from making a purchase. When any of the purchase request limit- 50 ing, purchase request blocking, or temporary purchase request blocking features is activated, the request is terminated.

When the purchase request successfully passes the initial fraud control of block **901**, the purchase request then 55 advances to block **902** where the form of payment that will be used to pay for the purchase is solicited. At step **902**, the user is prompted by, for example, a page that queries the user for the form of payment information the user wishes to use. The form of payment can be cash, debit cards, electronic draft or 60 check, electronic funds transfer, credit, major credit card, smart card, electronic wallet, and the like, or applying the charge to a telephone bill, a cable television account, a utility service account, an Internet service provider account, and the like.

System **507** may offer the user a discount when the form of payment selected by the user is convenient for the billing

system. A further discount may be given when the user is a frequent user who has not exceeded the user's allowance for prescribed purchases. Any other form of preferable treatment may also be initiated. In the exemplary embodiment described in FIG. 9, the user provides the form of payment information and sends the information to system 507 in a well-known manner. The user can also be requested to enter or supply information, such as a checking account number, a credit card or debit card numbers, a card expiration date, a telephone number, a cable television account number, a utility service account number, an Internet service provider account number, an address including zip code, billing address, date of birth, driver's license number, social security number, a password, a digital certificate, mother's maiden name, etc. When the form of payment is not successfully communicated to system 507 by the user, the purchase request is disconnected. Alternatively, the user may be temporarily blocked and/or given another chance for entering the correct information. The user may also be completely blocked from accessing system 507 again.

When the information is successfully communicated or entered, flow continues to block **904** where additional fraud controls are implemented. Such additional fraud controls may, for example, include comparing information given by the user against information stored in a database of information related to each respective user, verifying that the user's credit card or debit card number has not been in a negative database for delinquent payment. The information stored in this database can be part of or separate from the negative database of communication session originating Internet addresses and/or unique identifications, and can be a shared database.

The information entered or communicated by the user is also used for determining whether the user has not exceeded a permissible amount of money the user has spent during a predetermined period of time by querying a database. The queried database may be the same database used in step **901** for determining whether the user has exceeded any of the same criteria.

When a purchase request fails the additional fraud control of block 904, the purchase request is forwarded to block 910 where the purchase can be selectively blocked, temporarily blocked, or limited. A blocked purchase request includes a purchase request in which a credit card or debit card has expired or is invalid, and/or an address associated with the user, such as a billing address and/or zip code, is different from an address in the database associated with the user. A limited purchase request includes a purchase request in which a credit card or a debit card exceeds the monthly/weekly allocations of session or exceeds the time allowance for a certain period of time. A temporarily blocked purchase request includes a purchase request in which the zip code or other information supplied by the user does not match the appropriate information stored in a database. Moreover, the system can be designed so that purchase requests classified as blocked can also be classified as temporarily blocked when the system allows a user to supply information, such as the correct expiration date of a charge card. When the user is allowed to make payment to a lending institution in order to validate the credit or debit card, a communication session can be classified as temporarily blocked.

According to one embodiment of the invention, when the purchase request passes the additional fraud control, the credit card account information or the debit card account information is forwarded at block **905** to a remotely located site **511** for authorization. Site **511** can be accessed over the Internet through server **506**. Alternatively, site **511** can be

accessed via a modem link **512**. Remote sites used for authorization may, for example, include a credit bureau, a banking institution, a third party biller such as a telephone service provider, a cable television service provider, a utility service provider, an Internet service provider, or the like. Remote site **511** checks to ensure that the credit card, debit card or account number is valid. According to another embodiment of the present invention, when the purchase request passes the additional fraud control, the credit card account information or the debit card account information is forwarded to a local database to ensure that the credit card or debit card is valid.

When the predetermined charge to the account is approved or denied, remote site **511** sends an approval or denial notification back to system **507** at block **906**. When remote site **511** authorizes the purchase request, the purchase request is entered into system **507** at block **907**. When the purchase request is not authorized, the purchase request is either blocked or temporarily blocked until information regarding the credit bureau, banking institution, telephone service 20 account, cable television account, a utility service account, or Internet service provider account is settled by the user.

When the purchase request is entered into system 507, system 507 calculates the total billable amount for the session. System 507 then sends the billable amount to remote site 25 511 at block 908. System 507 can also send the credit card, debit card, telephone service account, cable television account, utility service account, or Internet service provider account information or some other identifying information along with the billable amount to remote site 511. Remote site 30 511 then charges the billable amount for the purchase is charged to the account at block 908. Alternatively, the billable amount is sent to a payment authorization database, which can be locally or remotely located. 35

FIGS. 10a-10c show a flow diagram summarizing the realtime billing and fraud control system of the present invention. At step 1001, a customer is connected to a service provider or a merchant providing telephone or communication session services, and/or goods and services for purchase by way of 40 e-commerce. At step 1002, the customer is queried for personal information and a method of payment that will be used by the customer. In situations when the customer has previously purchased services and/or goods, form of payment information can be automatically accessed from a form-of- 45 payment/credit database based on the ANI and/or other information that has been provided by the customer, and presented to the customer for possible selection by the customer. At step 1003, the personal information of the customer and the method of payment information that is to be used by the 50 customer are actively and/or passively captured. The personal information of the customer that is captured can include, the customer's telephone number, address, DL number, social security number, mother's maiden name, a PIN, a password, a digital certificate, a credit card number, a debit card number, 55 banking information, a voiceprint, a fingerprint, a portrait image and/or a computer network address.

At step 1004, the captured customer data is compared to information contained in one or more customer databases, such as any of an external shared negative customer database 60 1005, an internal negative customer database 1006, an external shared positive customer database 1007 and an internal positive customer database 1008. At step 1009, it is determined whether the captured customer database or a negative 65 customer database, or whether the captured customer data does not match information contained in any of the databases

accessed. If, at step **1009**, the captured customer data matches information contained in a positive customer database, flow continues to step **1010**

If, at step 1009, the captured customer data matches information contained in a negative customer database, flow continues to step 1011 where a service representative can intervene for making a final determination regarding blocking or limiting purchases of the goods and/or services available for purchase. When the service representative decides to block a purchase based on the available information, flow continues to step 1012. When the service representative, based on the available information, decides to limit or temporarily limit a purchase, flow continues to step 1013, and then to step 1010. Alternatively, flow can proceed to block purchases (step 1012) or limit purchases (step 1013) based on information available at decision step 1009.

If, at step 1009, the captured customer information does not match information contained in any of the databases that were accessed, flow continues to step 1014 where the captured information is verified at step 1015 with independent sources by queries to at least one external database, such as an ANI database, a credit card agency database, a credit report bureau database, a banking institution, and a check approval service. Flow continues to step 1016, where it is determined whether the captured customer information was verified. If not, flow continues to step 1017 where a service representative can intervene for making a final determination regarding blocking purchases of the goods and/or services available for purchase. When the service representative decides to block a purchase based on the available information, flow continues to step 1018 and to step 1019 where the captured information is shared with negative customer databases, such as databases 1005 and 1006. When the service representative decides to permit a purchase based on the available information, flow 35 continues to step 1010 where the customer information is compared to fraud control screening criteria and to establish a sale limit, and to step 1020 where the captured information is shared with positive customer databases, such as databases 1007 and 1008. Alternatively, flow can proceed to block purchases (step 1018) based on information available at decision step 1016.

At step **1010**, the customer information is compared to fraud control screening criteria and a sale limit is established. Flow continues to step **1021** where customer fraud screening criteria is accessed, such as a bill-to address, a ship-to address, a purchase-frequency limit, a purchase-value limit, a call origin location, the customer age, and customer gender. At step **1022**, it is determined whether the customer passed the fraud control screening. If not, flow continues to step **1023** where a service representative can intervene for making a final determination regarding blocking purchases of the goods and/or services available for purchase. When the service representative decides to block a purchase based on the available information, flow continues to step **1024**. Alternatively, flow can proceed to block purchases (step **1024**) based on information available at decision step **1022**.

If, at step **1022**, the customer passes the fraud control screening, flow continues to step **1025** where a customer purchase value limit is established. Flow continues to step **1026** where the established purchase value limit is communicated to appropriate internal and external databases, such as databases **1005-1008**. Flow continues to step **1027** where it is determined whether the customer purchase value has been authorized. If not, flow continues to step **1028** where a service representative can intervene for making a final determination regarding blocking purchases of the merchants goods and/or services. When the service representative decides to block a

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purchase based on the available information, flow continues to step 1029. Alternatively, flow can proceed to block purchases (step 1029) based on information available at decision step 1027.

If the customer purchase value was authorized at step 1027, flow continues to step 1030 where the customer selects goods and/or services having a value that is less than or equal to the established limit for the customer. Flow continues to step 1031 where the customer is billed by way of the customerselected method of payment, such as an invoice, an electronic funds transfer or e-draft, a credit or debit card transaction, an Internet Service Provider, a telephone, a cable or other utility account, or an e-wallet. The purchase value is transmitted to appropriate internal and external authorization and credit limit amount databases at step 1032 and the process is exited at step 1033.

Other modifications and enhancements to the present invention may be adaptively made for providing other services over a computer network, such as the Internet, than that 20 is selected from the group consisting of credit card, debit card, described, such as computer service advice, medical counseling, suicide hot-line and other services.

Any patents or publications referenced above should be deemed to be incorporated by reference as to their entire subject matter should one believe it relevant to obtain details from such sources for explanations of related arrangements and how they may be employed to advantage in the present invention. The present invention should only be deemed to be limited in scope by the claims which follow.

I claim:

1. A method for computerized fraud control for a transaction initiated over the Internet by a user at a user computer comprising:

receiving, over a computer network, a transaction request 35 at a fraud control system, wherein the fraud control system comprises one or more computers adapted to receive the transaction request, the transaction request comprising:

a method of payment,

an account identifier,

an amount of the transaction, and

an Internet address associated with the user; and

evaluating, by at least one of the one or more computers of the fraud control system, the Internet address to deter- 45 mine whether the transaction may be fraudulent.

2. The method of claim 1, wherein the evaluating comprises comparing the Internet address to known Internet addresses maintained in computer storage.

3. The method of claim 2, wherein the known Internet 50 addresses maintained in computer storage are in an Internet address negative database.

4. The method of claim 2, wherein the known Internet addresses maintained in computer storage are in a negative database

5. The method of claim 2, wherein the known Internet addresses maintained in computer storage are configured by the party that sent the transaction request.

6. The method of claim 1, wherein the evaluating comprises comparing the Internet address to a set of Internet 60 addresses maintained in computer storage that correspond to one or more geographic regions.

7. The method of claim 1, wherein the evaluating comprises:

identifying the number of transaction requests originating 65 from the Internet address during a time period; and comparing the number to a predetermined limit.

8. The method of claim 1, wherein the evaluating comprises checking for repeated transaction requests from the Internet address.

9. The method of claim 1, wherein the transaction request further includes physical address information associated with the user and wherein the evaluating further comprises comparing the physical address information with a geographic location associated with the Internet address.

10. The method of claim 9, wherein the physical address information is selected from the group consisting of shipping address information and billing address information.

11. The method of claim 1, wherein the transaction request is denied based, at least in part, on the evaluating.

12. The method of claim 1, wherein the transaction request 15 is held for manual review based, at least in part, on the evaluating

13. The method of claim 1, wherein the transaction request is approved based, at least in part, on the evaluating.

14. The method of claim 1, wherein the method of payment electronic draft, electronic check, and electronic funds transfer.

15. The method of claim 1, wherein the Internet address associated with the user is an IP address of a personal computer connected to the Internet.

16. A computerized fraud control system for a transaction initiated over the Internet by a user at a user computer comprising:

a fraud control system adapted to receive, over a computer network, a transaction request, wherein the fraud control system comprises one or more computers, each including at least one processor, and the transaction request comprises:

a method of payment,

an account identifier,

an amount of the transaction, and

an Internet address associated with the user, wherein the fraud control system further evaluates, by at least one of the one or more computers, the Internet address to determine whether the transaction may be fraudulent.

17. The system of claim 16, wherein the evaluating comprises comparing the Internet address to known Internet addresses maintained in computer storage.

18. The system of claim 17, wherein the known Internet addresses maintained in computer storage are in an Internet address negative database.

19. The system of claim **17**, wherein the known Internet addresses maintained in computer storage are in a negative database.

20. The system of claim 17, wherein the known Internet addresses maintained in computer storage are configured by the party that sent the transaction request.

21. The system of claim 16, wherein the evaluating comprises comparing the Internet address to a set of Internet 55 addresses maintained in computer storage that correspond to one or more geographic regions.

22. The system of claim 16, wherein the evaluating comprises

identifying the number of transaction requests originating from the Internet address during a time period; and

comparing the number to a predetermined limit.

23. The system of claim 16, wherein the evaluating comprises checking for repeated transaction requests from the Internet address.

24. The system of claim 16, wherein the transaction request further includes physical address information associated with the user and wherein the evaluating further comprises com5

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paring the physical address information with a geographic location associated with the Internet address.

25. The system of claim **24**, wherein the physical address information is selected from the group consisting of shipping address information and billing address information.

26. The system of claim 16, wherein the transaction request is denied based, at least in part, on the evaluating.

27. The system of claim 16, wherein the transaction request is held for manual review based, at least in part, on the evaluating. 10

28. The system of claim 16, wherein the transaction request is approved based, at least in part, on the evaluating.

29. The system of claim **16**, wherein the method of payment is selected from the group consisting of credit card, debit card, electronic draft, electronic check, and electronic 15 funds transfer.

30. The system of claim **16**, wherein the Internet address associated with the user is an IP address of a personal computer connected to the Internet.

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