

US Patents - Abstract pages:

Note:

Includes couple reissued patents by Aspect who acquired Melita International Inc and Inventions Inc patents



US008402070B2

(12) **United States Patent**
Szlam et al.

(10) **Patent No.:** **US 8,402,070 B2**
(45) **Date of Patent:** **Mar. 19, 2013**

- (54) **TRAINING, CERTIFYING, ASSIGNING AND COLLABORATING AGENTS AMONG MULTIPLE USERS**
- (75) Inventors: **Aleksander Szlam**, Alpharetta, GA (US); **Karl A. Walder**, Marietta, GA (US)
- (73) Assignee: **Aspect Software, Inc.**, Chelmsford, MA (US)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 2120 days.
- (21) Appl. No.: **10/449,872**
- (22) Filed: **May 30, 2003**

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(65) **Prior Publication Data**
US 2004/0111310 A1 Jun. 10, 2004

Related U.S. Application Data
(63) Continuation of application No. 09/395,498, filed on Sep. 14, 1999, now abandoned.

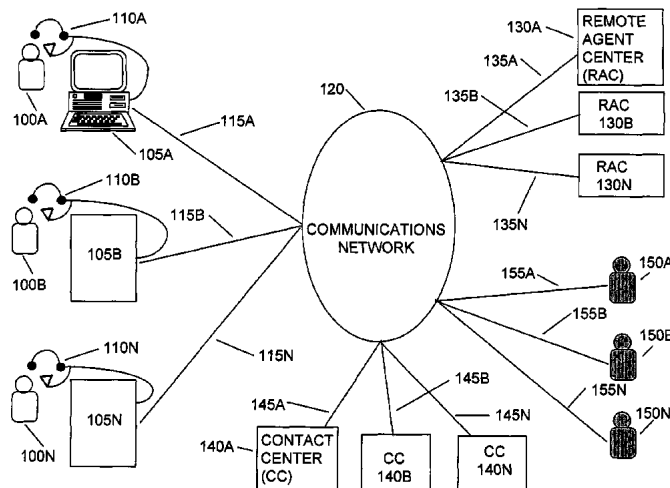
(51) **Int. Cl.**
G06F 17/00 (2006.01)
(52) **U.S. Cl.** **707/822; 707/610; 707/707; 707/787; 707/795; 707/802**
(58) **Field of Classification Search** 705/1, 7, 705/8, 9; 707/104.1, 610, 707, 787, 795, 707/802, 810, 822
See application file for complete search history.

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Primary Examiner — Sana Al Hashemi
(74) *Attorney, Agent, or Firm* — Bourque and Associates, PA

(57) **ABSTRACT**
Automatically accepting applications, and testing, training, certifying, assigning, allocating, controlling, and scheduling remote agents. An applicant (100) transmits an application to a remote agent center (RAC) (130) via a Communications Network (120). The application contains the person's profile, training, and experience. The RAC validates the skills via testing or third party confirmation, accepts the person as a remote worker, certifies the person's skill levels, and places the person in the remote worker pool. The remote worker can also obtain remote training on new or additional topics. The RAC evaluates the business demands of an external party, identifies remote workers with the needed skills who are available, and transmits the work at the appropriate time to the remote workers. The work is transmitted via or through the RAC. The external parties thus do not have to recruit, train, or test persons, or be concerned with staffing issues.

42 Claims, 5 Drawing Sheets





US007080321B2

(12) **United States Patent**
Aleksander et al.

(10) **Patent No.:** **US 7,080,321 B2**
(45) **Date of Patent:** **Jul. 18, 2006**

(54) **DYNAMIC HELP OPTION FOR INTERNET CUSTOMERS**

(56)

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(75) Inventors: **Szlam Aleksander**, Alpharetta, GA (US); **Thomas R. Buiel**, Atlanta, GA (US); **Kirk L. Somers**, Alpharetta, GA (US); **Charles L. Warner, II**, Decatur, GA (US)

(73) Assignee: **Aspect Software, Inc.**, Westford, MA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 387 days.

* cited by examiner

Primary Examiner—Kieu D. Vu

(74) *Attorney, Agent, or Firm*—Bourque & Associates, P.A.

(21) Appl. No.: **09/885,717**

(22) Filed: **Jun. 20, 2001**

(65) **Prior Publication Data**

US 2002/0047859 A1 Apr. 25, 2002

Related U.S. Application Data

(60) Provisional application No. 60/213,378, filed on Jun. 23, 2000.

(51) **Int. Cl.**
G06F 3/00 (2006.01)

(52) **U.S. Cl.** **715/708; 715/707; 715/705**

(58) **Field of Classification Search** **715/708, 715/707, 705, 706, 709, 710, 711, 712, 713, 715/745, 760, 977, 501.1, 513, 108**

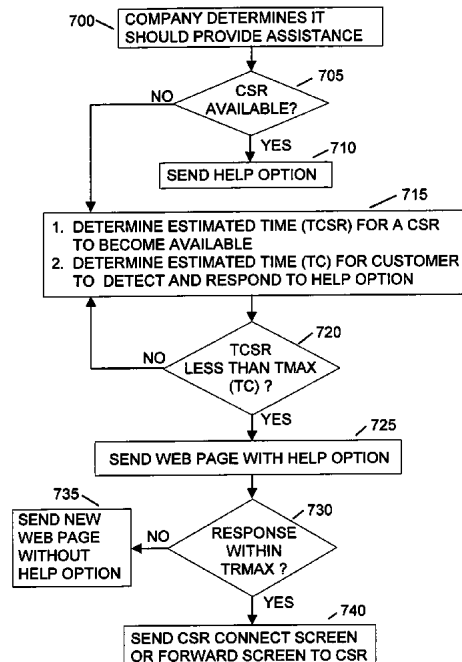
See application file for complete search history.

(57)

ABSTRACT

The invention determines when an Internet browsing customer should be provided assistance by monitoring factors such as the customer profile saved at the server or in cookies, the time a customer spends on particular web pages, errors in forms submitted by the customer, web pages repeatedly viewed by a customer, and statistically established abandon points. When the invention determines a customer should be provided assistance, the invention reviews the availability and probability of availability of the customer service representatives (CSRs). If a CSR is available or predicted to be available, the customer is presented with a HELP option. If the customer does not respond to the HELP option within a predetermined time, the HELP option is removed. By dynamically determining the appropriate time to provide a HELP option and only providing the HELP option when a CSR is available, the invention proactively provides meaningful service at the critical time.

31 Claims, 8 Drawing Sheets





US006925607B2

(12) **United States Patent**
Szlam et al.

(10) **Patent No.:** **US 6,925,607 B2**
(45) **Date of Patent:** ***Aug. 2, 2005**

(54) **METHOD FOR CONSOLIDATION OF MULTIPLE DATA SOURCES**

(58) **Field of Search** 715/762, 540, 715/746; 707/10; 379/142.17, 142; 345/746

(75) Inventors: **Aleksander Szlam**, Alpharetta, GA (US); **James E. Owen**, Smyrna, GA (US)

(56) **References Cited**

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(73) Assignee: **Concerto Software, Inc.**, Westford, MA (US)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 362 days.

* cited by examiner

This patent is subject to a terminal disclaimer.

Primary Examiner—John Cabeca
Assistant Examiner—Dennis G. Bonshock
(74) *Attorney, Agent, or Firm*—Bourque & Assoc.

(57) **ABSTRACT**

A method for consolidating the information from multiple information sources so as to provide a uniform set of screens for an agent. All of the information sources are automatically linked in a coherent manner, which is defined by the user. The provision of an information item into a field automatically accesses user-specified information items from the various information sources. The station (10) receives (501) the initial information item and then sends (503) this information item to the sources specified by the information field, receives additional information items from these sources, and displays or presents the information items received in any desired media type.

(21) Appl. No.: **09/982,514**

(22) Filed: **Oct. 18, 2001**

(65) **Prior Publication Data**

US 2002/0145624 A1 Oct. 10, 2002

Related U.S. Application Data

(60) Continuation of application No. 08/908,854, filed on Aug. 8, 1997, now Pat. No. 6,362,838, which is a division of application No. 08/441,830, filed on May 16, 1995, now Pat. No. 5,675,637.

(51) **Int. Cl.**⁷ **G06F 17/30**

(52) **U.S. Cl.** **715/762; 715/540; 707/10**

1 Claim, 10 Drawing Sheets

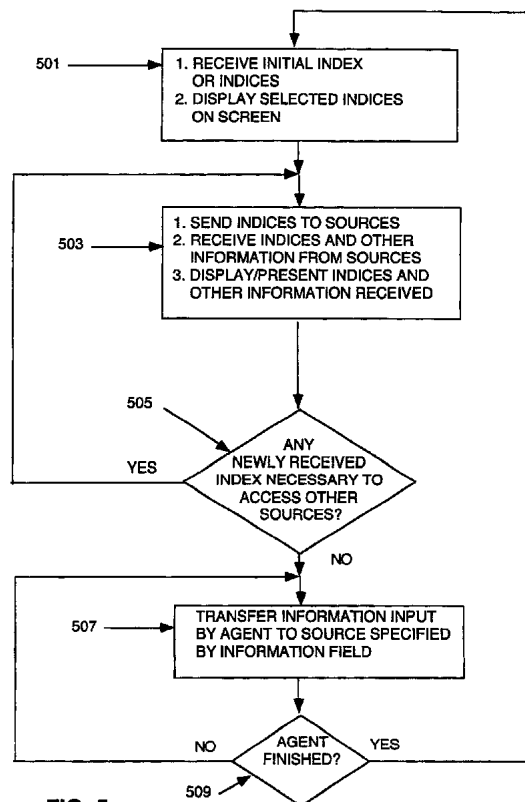


FIG. 5



US006868395B1

(12) **United States Patent**
Szlam et al.

(10) **Patent No.:** **US 6,868,395 B1**
(45) **Date of Patent:** **Mar. 15, 2005**

(54) **BUSINESS TRANSACTIONS USING THE INTERNET**

6,073,112 A * 6/2000 Geerlings 705/10

OTHER PUBLICATIONS

(75) Inventors: **Aleksander Szlam**, Alpharetta, GA (US); **Karl A. Walder**, Marietta, GA (US); **Boguslaw Gil**, Doraville, GA (US)

Microsoft Press, Second Edition, The Comprehensive Standard for Business, School, Library, and Home, 1994, p. 143.*

(73) Assignee: **CIM, Ltd.** (KY)

* cited by examiner

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

Primary Examiner—James P. Trammell
Assistant Examiner—Daniel L. Greene
(74) *Attorney, Agent, or Firm*—Bourque & Associates

(21) Appl. No.: **09/469,587**

(57) **ABSTRACT**

(22) Filed: **Dec. 22, 1999**

(51) **Int. Cl.**⁷ **G06F 17/60**; G06F 15/21

In a campaign, a customer's file is reviewed to determine the offer or solicitation to send to the customer and the time such will remain open, and an e-mail message is sent to the customer that contains the offer or solicitation in text, a packet, or a URL address for a protected personalized web page (501). The packet may be opened on-line or off-line allowing the customer to provide information or terms that are subsequently sent to (505) the originator. Alternatively, such information is obtained via the protected, personalized web page to which the customer is referred. If the customer provides acceptable information and terms (510, 515), the transaction is completed (520).

(52) **U.S. Cl.** **705/27**; 705/400; 705/401; 705/402; 705/403; 705/404; 705/405; 705/406; 705/407; 705/408; 705/7; 705/10; 705/14; 709/217; 709/218; 709/219; 709/238; 407/530; 407/531

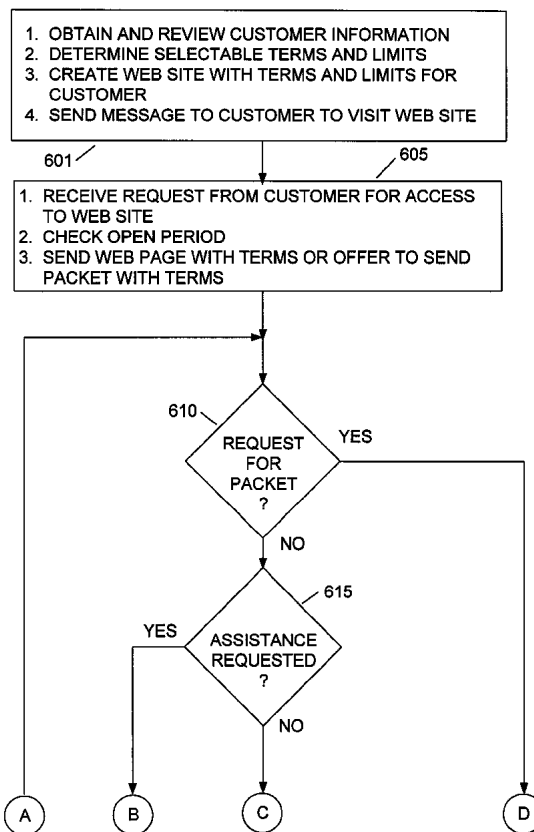
(58) **Field of Search** 705/27, 26, 400-408; 709/217-219, 238

(56) **References Cited**

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8 Claims, 14 Drawing Sheets





US 20020181398A1

(19) **United States**

(12) **Patent Application Publication**
Szlam

(10) **Pub. No.: US 2002/0181398 A1**

(43) **Pub. Date: Dec. 5, 2002**

(54) **REMOTE ACCESS, EMULATION, AND CONTROL OF OFFICE EQUIPMENT**

(52) **U.S. Cl. 370/230; 370/352; 370/401**

(75) Inventor: **Aleksander Szlam**, Alpharetta, GA (US)

(57) **ABSTRACT**

Correspondence Address:
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ATLANTA, GA 30308-2216 (US)

A business has a main office (13) which has a controller (225), a plurality of telephones, a plurality of computers, a PBX and/or an ACD (216), and a plurality of corporate resources (220) such as servers, hosts, applications, databases, routers, gateways, switches, a voicemail system, an e-mail system, and facsimile servers. A user at the main office (13) has access to the various corporate resources and also has a portable communications device (10), such as a laptop computer, with which to place a call to the controller via a communications link (11) such as the Internet, to send user commands to and receive the resultant status, information, or operation, from, the controller, to access any of the corporate resources and data, and to make calls to and receive communications from outside parties (12). In addition, the user may create a personal profile which causes the controller to forward selected communications to him, via the Internet, wherever the user may be. The laptop computer allows the user to operate in the same manner as if the user was actually in his office, including placing, receiving, forwarding, and conferencing telephone calls. As a result, regardless of where the user is located, and regardless of what equipment is actually available at the current location of the user, the user can conduct business using the same devices and features that are available at the user's office.

(73) Assignee: **Inventions, Inc.**, Norcross, GA (US)

(21) Appl. No.: **10/059,872**

(22) Filed: **Jan. 29, 2002**

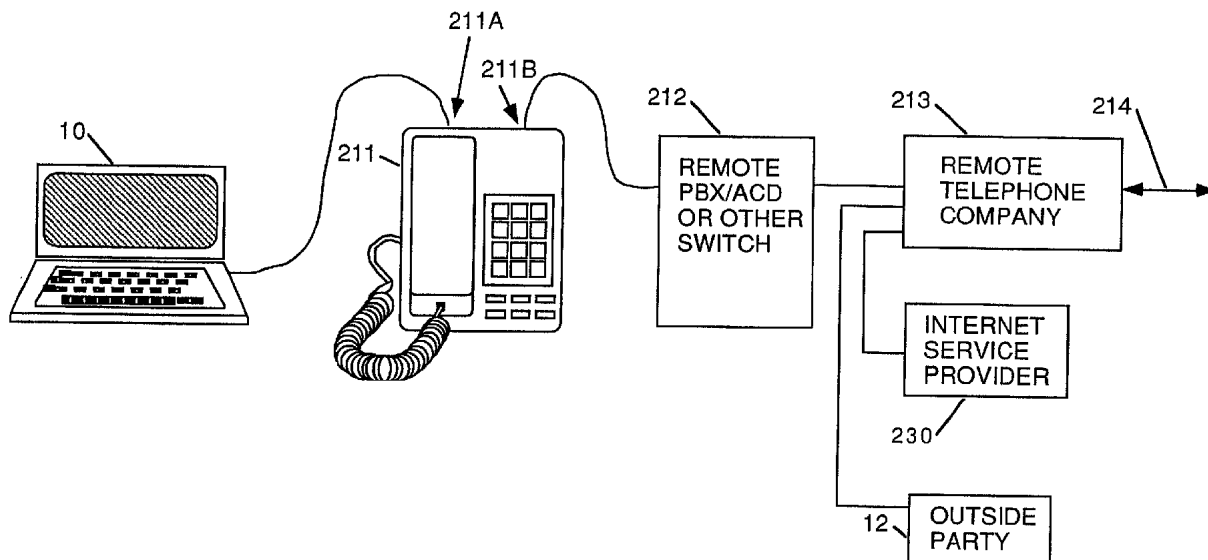
Related U.S. Application Data

(63) Continuation of application No. 08/977,412, filed on Nov. 24, 1997, now Pat. No. 6,359,892.

(60) Provisional application No. 60/064,251, filed on Nov. 4, 1997.

Publication Classification

(51) **Int. Cl.⁷ H04L 12/26**





US 20020145624A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2002/0145624 A1**

Szlam et al.

(43) **Pub. Date:**

Oct. 10, 2002

(54) **METHOD FOR CONSOLIDATION OF MULTIPLE DATA SOURCES**

(75) Inventors: **Aleksander Szlam**, Alpharetta, GA (US); **James E. Owen**, Smyrna, GA (US)

Correspondence Address:
TROUTMAN SANDERS LLP
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(73) Assignee: **Inventions, Inc.**, 5051 Peachtree Corners Circle, Norcross, GA 30092-2500 (US)

(21) Appl. No.: **09/982,514**

(22) Filed: **Oct. 18, 2001**

Related U.S. Application Data

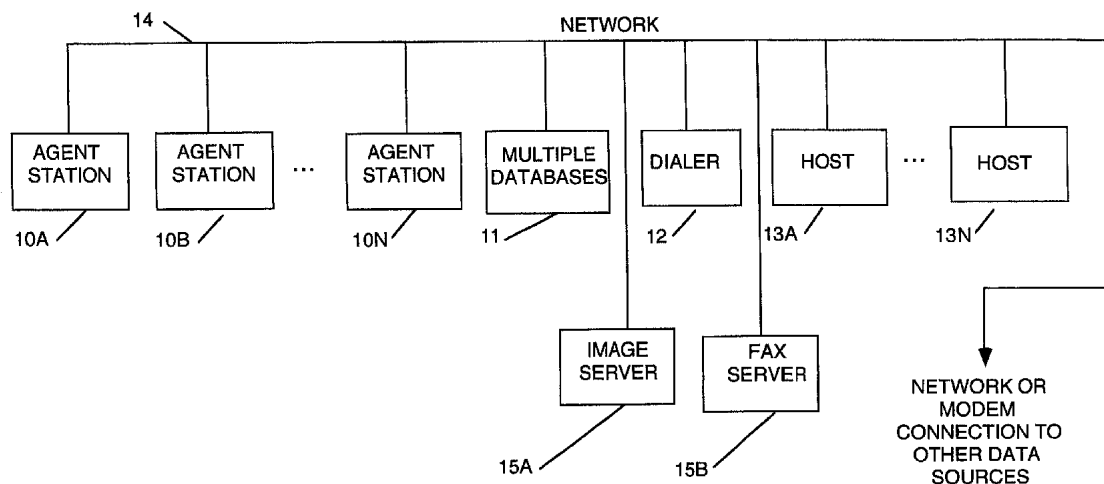
(60) Continuation of application No. 08/908,854, filed on Aug. 8, 1997, now Pat. No. 6,362,838, which is a division of application No. 08/441,830, filed on May 16, 1995, now Pat. No. 5,675,637.

Publication Classification

(51) **Int. Cl.⁷** **G09G 5/00**
(52) **U.S. Cl.** **345/738**

(57) **ABSTRACT**

A method for consolidating the information from multiple information sources so as to provide a uniform set of screens for an agent. All of the information sources are automatically linked in a coherent manner, which is defined by the user. The provision of an information item into a field automatically accesses user-specified information items from the various information sources. The user may combine and present the information from the various information sources in a uniform manner so that a given item of information always appears at the same location on the screen, and in the form desired, regardless of the original display format that is used by the information source. The station (10) receives (501) the initial information item and then sends (503) this information item to the sources specified by the information field, receives additional information items from these sources, and displays or presents the information items received in any desired media type. The station determines (505) whether any of the information item that it received from a source is necessary to access another source. If so then the steps (503 and 505) are repeated with the new information items until all of the information items have been obtained from all of the sources. The station also transfers (507) information items input by the agent to the source specified by the information field into which the agent is entering the information. In this manner, changes to the records of a customer are automatically and instantly made in all of the sources. Thus, the agent need not switch between, be familiar with the details of operation of, or know how to access, a source, screen, or application, because these details are automatically tended to by the station 10. The agent can therefore devote his or her time to speedily and effectively servicing the customer.





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(19) **United States**

(12) **Patent Application Publication**
Szlam et al.

(10) **Pub. No.: US 2002/0047859 A1**

(43) **Pub. Date: Apr. 25, 2002**

(54) **DYNAMIC HELP OPTION FOR INTERNET CUSTOMERS**

Publication Classification

(51) **Int. Cl.⁷ G06F 13/00**

(52) **U.S. Cl. 345/705; 345/745**

(75) Inventors: **Aleksander Szlam**, Alpharetta, GA (US); **Thomas R. Buiel**, Atlanta, GA (US); **Kirk L. Somers**, Alpharetta, GA (US); **Charles L. Warner II**, Decatur, GA (US)

(57) **ABSTRACT**

Correspondence Address:
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600 Peachtree Street, N.E.
Atlanta, GA 30308-2216 (US)

The invention determines when an Internet browsing customer should be provided assistance by monitoring factors such as the customer profile saved at the server or in cookies, the time a customer spends on particular web pages, errors in forms submitted by the customer, web pages repeatedly viewed by a customer, and statistically established abandon points. When the invention determines a customer should be provided assistance, the invention reviews the availability and probability of availability of the customer service representatives (CSRs). If a CSR is available or predicted to be available, the customer is presented with a HELP option. If the customer does not respond to the HELP option within a predetermined time, the HELP option is removed. By dynamically determining the appropriate time to provide a HELP option and only providing the HELP option when a CSR is available, the invention proactively provides meaningful service at the critical time.

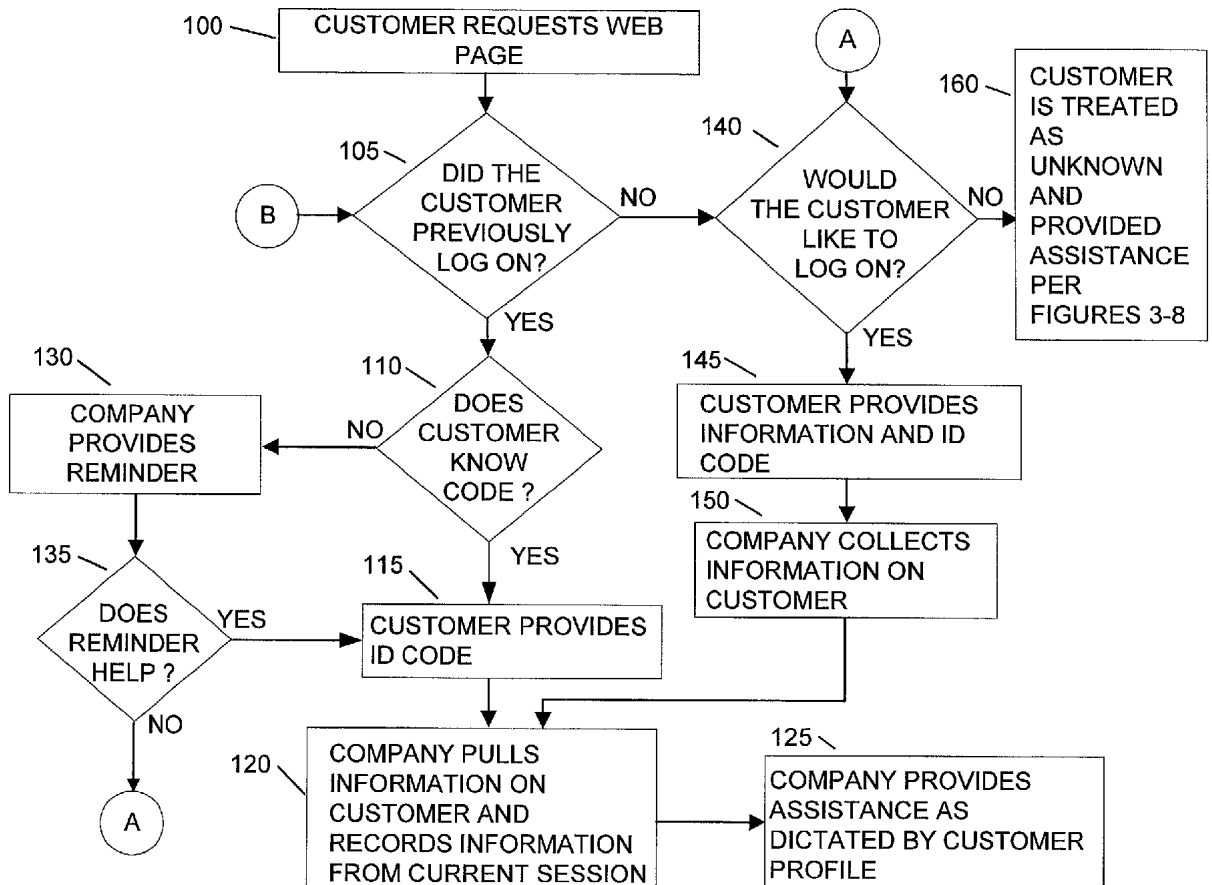
(73) Assignee: **Inventions, Inc.**, 5051 Peachtree Corners Circle, Norcross, GA 30092-2500 (US)

(21) Appl. No.: **09/885,717**

(22) Filed: **Jun. 20, 2001**

Related U.S. Application Data

(63) Non-provisional of provisional application No. 60/213,378, filed on Jun. 23, 2000.





US007080321B2

(12) **United States Patent**
Aleksander et al.

(10) **Patent No.:** **US 7,080,321 B2**
(45) **Date of Patent:** **Jul. 18, 2006**

(54) **DYNAMIC HELP OPTION FOR INTERNET CUSTOMERS**

(75) Inventors: **Szlam Aleksander**, Alpharetta, GA (US); **Thomas R. Buiel**, Atlanta, GA (US); **Kirk L. Somers**, Alpharetta, GA (US); **Charles L. Warner, II**, Decatur, GA (US)

(73) Assignee: **Aspect Software, Inc.**, Westford, MA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 387 days.

(21) Appl. No.: **09/885,717**

(22) Filed: **Jun. 20, 2001**

(65) **Prior Publication Data**

US 2002/0047859 A1 Apr. 25, 2002

Related U.S. Application Data

(60) Provisional application No. 60/213,378, filed on Jun. 23, 2000.

(51) **Int. Cl.**
G06F 3/00 (2006.01)

(52) **U.S. Cl.** **715/708; 715/707; 715/705**

(58) **Field of Classification Search** **715/708, 715/707, 705, 706, 709, 710, 711, 712, 713, 715/745, 760, 977, 501.1, 513, 108**

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,185,782 A *	2/1993	Srinivasan	379/210.01
5,239,617 A *	8/1993	Gardner et al.	706/11
5,933,140 A *	8/1999	Strahorn et al.	345/712
6,178,439 B1 *	1/2001	Feit	709/200
6,256,620 B1 *	7/2001	Jawahar et al.	707/2
6,262,730 B1 *	7/2001	Horvitz et al.	345/707
6,356,283 B1 *	3/2002	Guedalia	345/760
6,584,496 B1 *	6/2003	Ludtke	709/217

* cited by examiner

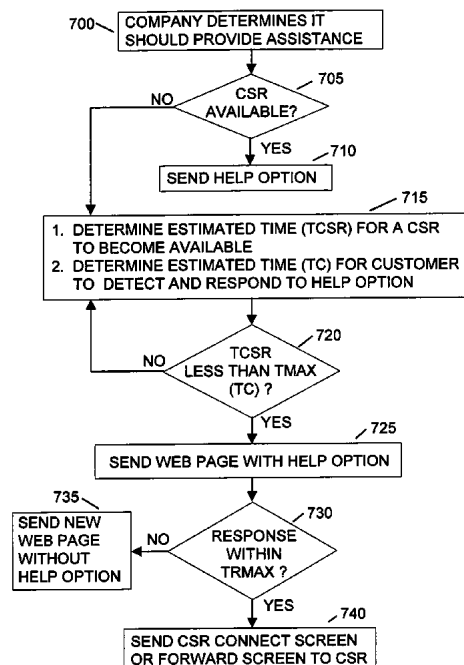
Primary Examiner—Kieu D. Vu

(74) *Attorney, Agent, or Firm*—Bourque & Associates, P.A.

(57) **ABSTRACT**

The invention determines when an Internet browsing customer should be provided assistance by monitoring factors such as the customer profile saved at the server or in cookies, the time a customer spends on particular web pages, errors in forms submitted by the customer, web pages repeatedly viewed by a customer, and statistically established abandon points. When the invention determines a customer should be provided assistance, the invention reviews the availability and probability of availability of the customer service representatives (CSRs). If a CSR is available or predicted to be available, the customer is presented with a HELP option. If the customer does not respond to the HELP option within a predetermined time, the HELP option is removed. By dynamically determining the appropriate time to provide a HELP option and only providing the HELP option when a CSR is available, the invention proactively provides meaningful service at the critical time.

31 Claims, 8 Drawing Sheets





US 20040133434A1

(19) **United States**

(12) **Patent Application Publication**
Szlam et al.

(10) **Pub. No.: US 2004/0133434 A1**

(43) **Pub. Date: Jul. 8, 2004**

(54) **METHOD AND APPARATUS FOR PROVIDING RESULT-ORIENTED CUSTOMER SERVICE**

application No. 08/318,506, filed on Oct. 5, 1994, now Pat. No. 5,594,791.

(75) Inventors: **Aleksander Szlam**, Norcross, GA (US);
James E. Owen, Smyrna, GA (US)

Publication Classification

(51) **Int. Cl.⁷ G06F 17/60**
(52) **U.S. Cl. 705/1**

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(57) **ABSTRACT**

An automated customer service system and method which maintains and uses a customer sensitivity profile to contact the customer in a manner, at a time and date, and at a location which are preferred by the customer. The automated customer service system also maintains and uses an agent qualification profile, in conjunction with the customer sensitivity profile, to automatically assign agents to the various campaigns. An agent qualification profile identifies any special skills or qualifications that an agent may possess, such as language skills, type of voice, efficiency, and type of call processing skills. The system administrator devises a strategy script based upon the customer sensitivity requirements and the agent qualifications. The strategy script determines which agents meet which requirements, and whether there are adequate agents to handle the requirements of concurrent campaigns.

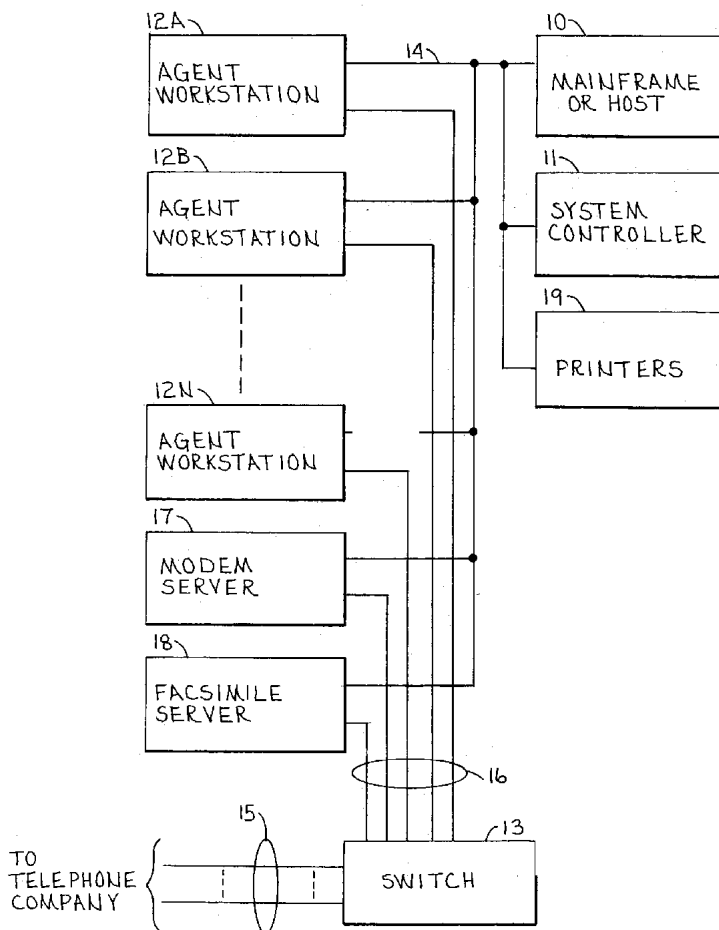
(73) Assignee: **Inventions, Inc.**, Norcross, GA (US)

(21) Appl. No.: **10/453,852**

(22) Filed: **Jun. 3, 2003**

Related U.S. Application Data

(60) Continuation of application No. 09/325,205, filed on Jun. 3, 1999, now abandoned, which is a continuation of application No. 08/764,324, filed on Dec. 12, 1996, now Pat. No. 5,963,635, which is a division of





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(19) **United States**

(12) **Patent Application Publication**
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(10) **Pub. No.: US 2004/0111310 A1**
(43) **Pub. Date: Jun. 10, 2004**

(54) **TRAINING, CERTIFYING, ASSIGNING AND COLLABORATING AGENTS AMONG MULTIPLE USERS**

Publication Classification

(51) **Int. Cl.⁷** **G06F 17/60**
(52) **U.S. Cl.** **705/8**

(75) Inventors: **Aleksander Szlam**, Alpharetta, GA (US); **Karl A. Walder**, Marietta, GA (US)

(57) **ABSTRACT**

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ATLANTA, GA 30309 (US)

Automatically accepting applications, and testing, training, certifying, assigning, allocating, controlling, and scheduling remote agents. An applicant (100) transmits an application to a remote agent center (RAC) (130) via a Communications Network (120). The application contains the person's profile, training, and experience. The RAC validates the skills via testing or third party confirmation, accepts the person as a remote worker, certifies the person's skill levels, and places the person in the remote worker pool. The remote worker can also obtain remote training on new or additional topics. The RAC evaluates the business demands of an external party, identifies remote workers with the needed skills who are available, and transmits the work at the appropriate time to the remote workers. The work is transmitted via or through the RAC. The external parties thus do not have to recruit, train, or test persons, or be concerned with staffing issues.

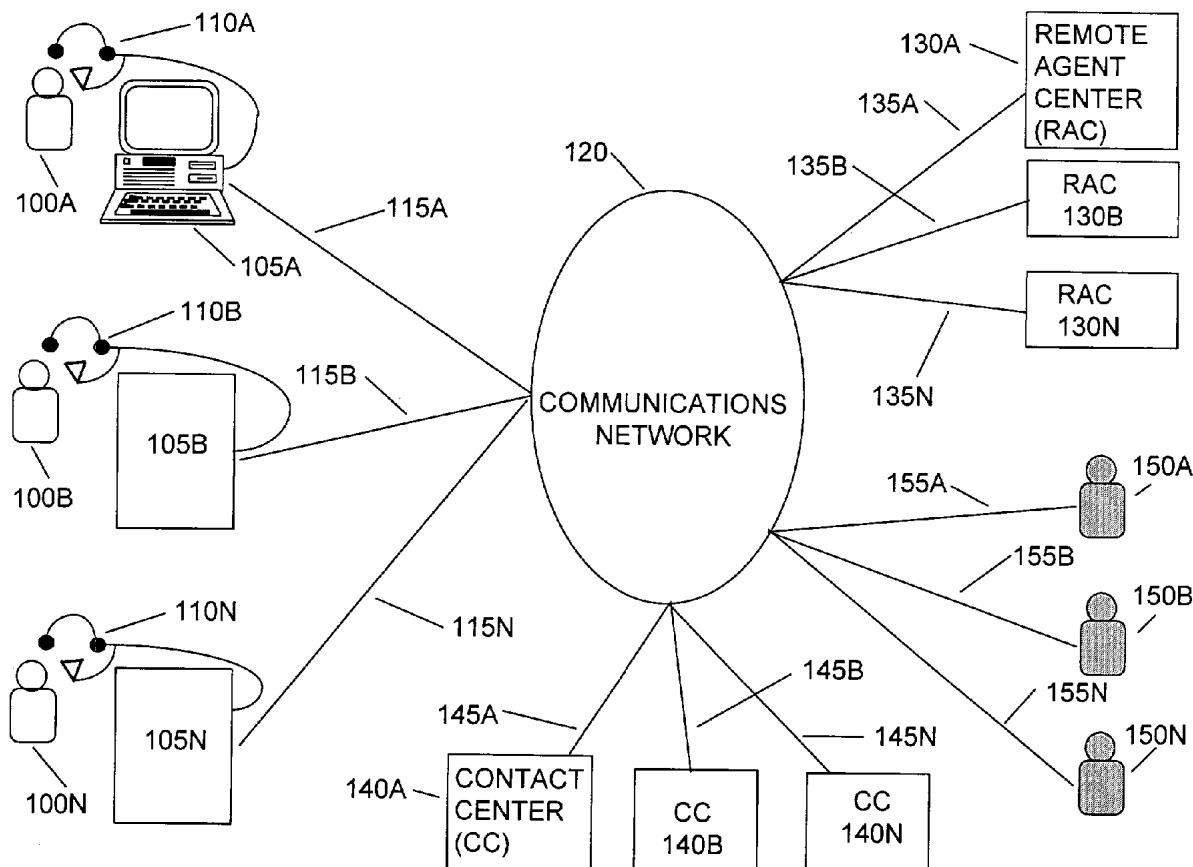
(73) Assignee: **Inventions, Inc.**, Norcross, GA

(21) Appl. No.: **10/449,872**

(22) Filed: **May 30, 2003**

Related U.S. Application Data

(63) Continuation of application No. 09/395,498, filed on Sep. 14, 1999, now abandoned.





US 20020181398A1

(19) **United States**

(12) **Patent Application Publication**
Szlam

(10) **Pub. No.: US 2002/0181398 A1**

(43) **Pub. Date: Dec. 5, 2002**

(54) **REMOTE ACCESS, EMULATION, AND CONTROL OF OFFICE EQUIPMENT**

(52) **U.S. Cl. 370/230; 370/352; 370/401**

(75) Inventor: **Aleksander Szlam**, Alpharetta, GA (US)

(57) **ABSTRACT**

Correspondence Address:
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ATLANTA, GA 30308-2216 (US)

A business has a main office (13) which has a controller (225), a plurality of telephones, a plurality of computers, a PBX and/or an ACD (216), and a plurality of corporate resources (220) such as servers, hosts, applications, databases, routers, gateways, switches, a voicemail system, an e-mail system, and facsimile servers. A user at the main office (13) has access to the various corporate resources and also has a portable communications device (10), such as a laptop computer, with which to place a call to the controller via a communications link (11) such as the Internet, to send user commands to and receive the resultant status, information, or operation, from, the controller, to access any of the corporate resources and data, and to make calls to and receive communications from outside parties (12). In addition, the user may create a personal profile which causes the controller to forward selected communications to him, via the Internet, wherever the user may be. The laptop computer allows the user to operate in the same manner as if the user was actually in his office, including placing, receiving, forwarding, and conferencing telephone calls. As a result, regardless of where the user is located, and regardless of what equipment is actually available at the current location of the user, the user can conduct business using the same devices and features that are available at the user's office.

(73) Assignee: **Inventions, Inc.**, Norcross, GA (US)

(21) Appl. No.: **10/059,872**

(22) Filed: **Jan. 29, 2002**

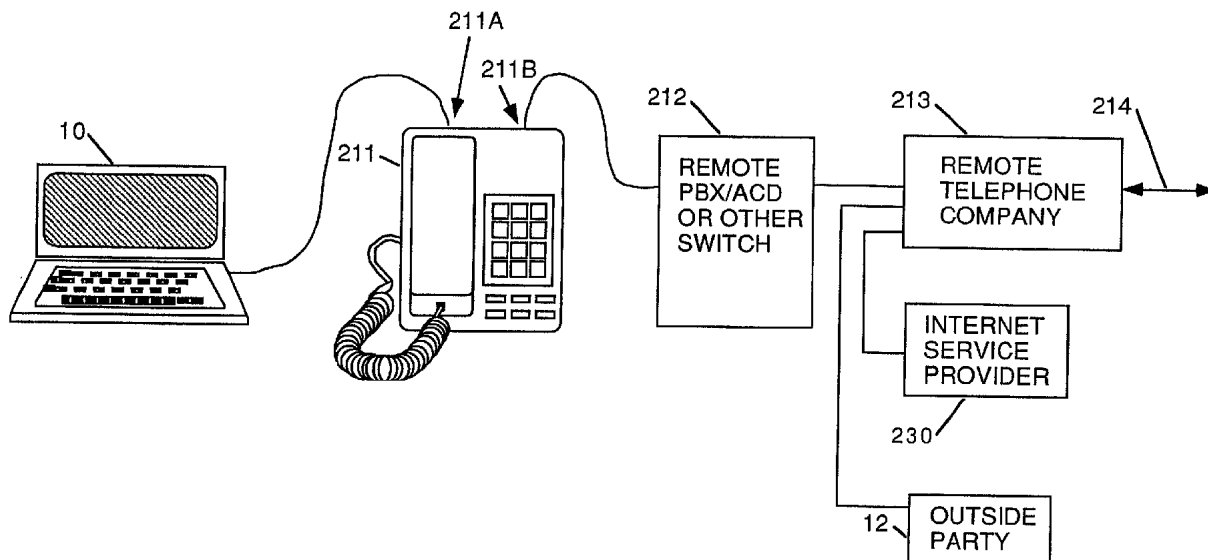
Related U.S. Application Data

(63) Continuation of application No. 08/977,412, filed on Nov. 24, 1997, now Pat. No. 6,359,892.

(60) Provisional application No. 60/064,251, filed on Nov. 4, 1997.

Publication Classification

(51) **Int. Cl.⁷ H04L 12/26**





US006362838B1

(12) **United States Patent**
Szlam et al.

(10) **Patent No.:** **US 6,362,838 B1**
(45) **Date of Patent:** ***Mar. 26, 2002**

(54) **METHOD FOR CONSOLIDATION OF MULTIPLE DATA SOURCES**

(75) Inventors: **Aleksander Szlam**, Norcross; **James E. Owen**, Smyrna, both of GA (US)

(73) Assignee: **Inventions, Inc.**, Norcross, GA (US)

(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **08/908,854**

(22) Filed: **Aug. 8, 1997**

Related U.S. Application Data

(62) Division of application No. 08/441,830, filed on May 16, 1995, now Pat. No. 5,675,637.

(51) **Int. Cl.**⁷ **G06F 3/00**

(52) **U.S. Cl.** **345/762; 379/142.17**

(58) **Field of Search** **345/333; 707/501, 707/505, 509, 201, 102, 906, 908, 515-516; 705/509**

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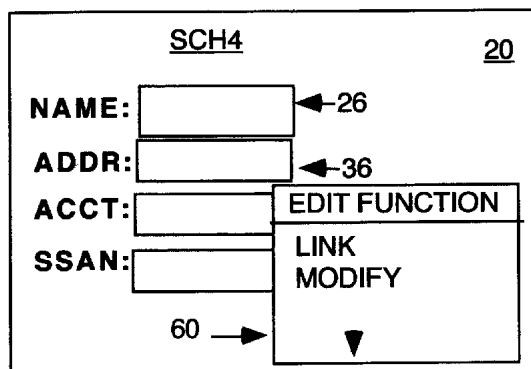
Primary Examiner—Cao H. Nguyen

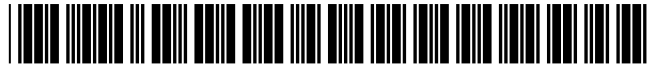
(74) *Attorney, Agent, or Firm*—Troutman Sanders LLP; Charles L. Warner

(57) **ABSTRACT**

A method for consolidating the information from multiple information sources so as to provide a uniform set of screens for an agent. All of the information sources are automatically linked in a coherent manner, which is defined by the user. The provision of an information item into a field automatically accesses user-specified information items from the various information sources. The user may combine and present the information from the various information sources in a uniform manner so that a given item of information always appears at the same location on the screen, and in the form desired, regardless of the original display format that is used by the information source. The station (10) receives (501) the initial information item and then sends (503) this information item to the sources specified by the information field, receives additional information items from these sources, and displays or presents the information items received in any desired media type. The station determines (505) whether any of the information item that it received from a source is necessary to access another source. If so then the steps (503 and 505) are repeated with the new information items until all of the information items have been obtained from all of the sources. The station also transfers (507) information items input by the agent to the source specified by the information field into which the agent is entering the information. In this manner, changes to the records of a customer are automatically and instantly made in all of the sources. Thus, the agent need not switch between, be familiar with the details of operation of, or know how to access, a source, screen, or application, because these details are automatically tended to by the station 10. The agent can therefore devote his or her time to speedily and effectively servicing the customer.

34 Claims, 10 Drawing Sheets





US006359892B1

(12) **United States Patent**
Szlam

(10) **Patent No.:** **US 6,359,892 B1**
(45) **Date of Patent:** **Mar. 19, 2002**

(54) **REMOTE ACCESS, EMULATION, AND CONTROL OF OFFICE EQUIPMENT, DEVICES AND SERVICES**

WO WO 96/31044 10/1996
WO WO 97/18662 5/1997
WO WO 97/38518 10/1997

(75) Inventor: **Aleksander Szlam**, Norcross, GA (US)

* cited by examiner

(73) Assignee: **Inventions, Inc.**, Norcross, GA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

Primary Examiner—Ricky Ngo
(74) *Attorney, Agent, or Firm*—Troutman Sanders LLP; Charles L. Warner

(21) Appl. No.: **08/977,412**

(22) Filed: **Nov. 24, 1997**

(57) **ABSTRACT**

Related U.S. Application Data

(60) Provisional application No. 60/064,251, filed on Nov. 4, 1997.

(51) **Int. Cl.**⁷ **H04M 3/42**; H04M 7/00

(52) **U.S. Cl.** **370/401**; 370/465; 709/217; 709/227

(58) **Field of Search** 370/352, 353, 370/354, 355, 356, 400, 401, 465, 466; 709/200, 203, 217, 218, 219, 227, 249, 250; 379/265, 93.03, 211, 93.02, 212, 214, 419, 93.07, 100.12, 207

A business has a main office (13) which has a controller (225), a plurality of telephones, a plurality of computers, a PBX and/or an ACD (216), and a plurality of corporate resources (220) such as servers, hosts, applications, databases, routers, gateways, switches, a voicemail system, an e-mail system, and facsimile servers. A user at the main office (13) has access to the various corporate resources and also has a portable communications device (10), such as a laptop computer, with which to place a call to the controller via a communications link (11) such as the Internet, to send user commands to and receive the resultant status, information, or operation, from, the controller, to access any of the corporate resources and data, and to make calls to and receive communications from outside parties (12). In addition, the user may create a personal profile which causes the controller to forward selected communications to him, via the Internet, wherever the user may be. The laptop computer allows the user to operate in the same manner as if the user was actually in his office, including placing, receiving, forwarding, and conferencing telephone calls. As a result, regardless of where the user is located, and regardless of what equipment is actually available at the current location of the user, the user can conduct business using the same devices and features that are available at the user's office.

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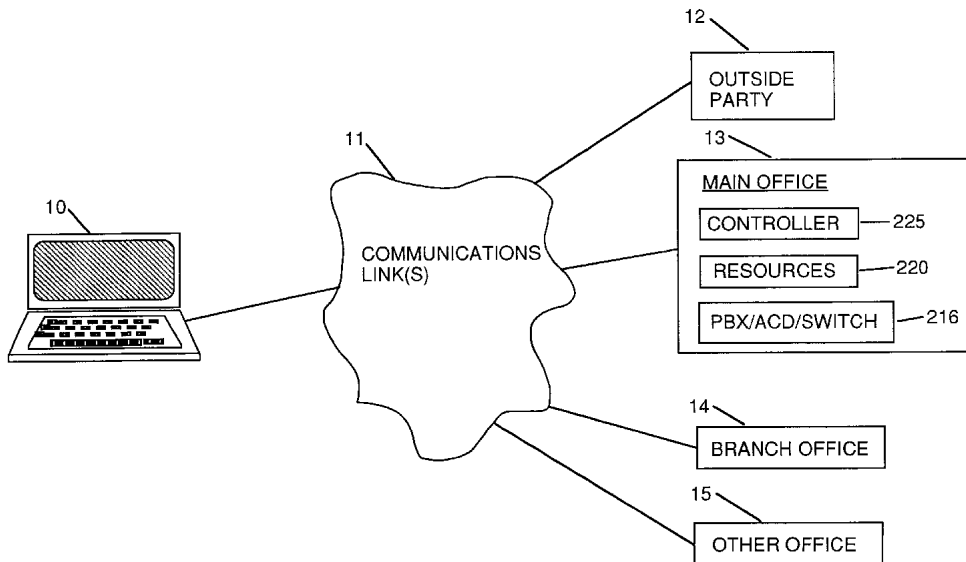
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EP 0 880 255 A2 11/1998

7 Claims, 10 Drawing Sheets





US006314089B1

(12) **United States Patent**
Szlam et al.

(10) **Patent No.:** **US 6,314,089 B1**
(45) **Date of Patent:** **Nov. 6, 2001**

(54) **CREATING AND USING AN ADAPTABLE
MULTIPLE-CONTACT TRANSACTION
OBJECT**

5,862,325 * 1/1999 Reed et al. 395/200.31

FOREIGN PATENT DOCUMENTS

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(75) Inventors: **Aleksander Szlam**, Norcross; **James E. Owen**, Smyrna, both of GA (US)

(73) Assignee: **Inventions, Inc.**, Norcross, GA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **08/840,906**

(22) Filed: **Apr. 17, 1997**

Related U.S. Application Data

(60) Provisional application No. 60/016,782, filed on May 7, 1996.

(51) **Int. Cl.**⁷ **H04L 12/16**

(52) **U.S. Cl.** **370/270; 370/352; 379/201; 709/238**

(58) **Field of Search** 370/254, 255, 370/256, 270, 351, 389, 400, 401, 364, 352; 379/265, 220, 266, 90.1, 142, 88.25, 201, 88.22, 210; 395/200.31, 702; 709/204, 238

(56) **References Cited**

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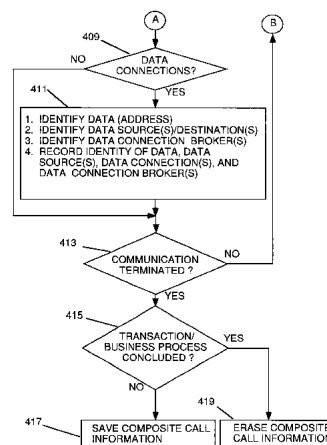
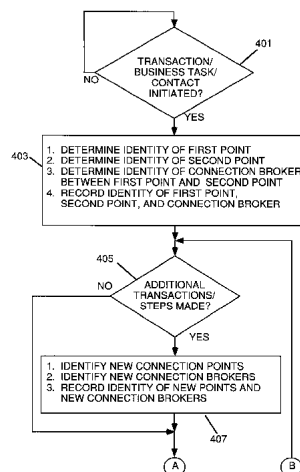
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Primary Examiner—Hassan Kizlo
Assistant Examiner—John Pezzlo
(74) *Attorney, Agent, or Firm*—Troutman Sanders LLP; Charles L. Warner

(57) **ABSTRACT**

An object is dynamically created which contains all of the information relating to connections established during a transaction. This object also contains information and/or pointers to information which was used in a communication during the transaction. The object further contains tests for triggering events. When a triggering event occurs the connections are automatically re-established so that a further communication relating to a transaction may be accomplished with excellent efficiency and without any duplication of effort by an agent (including an electronic agent or device) to locate information which was located during the previous communication. The test is administered by a business process mediator, which invokes a business task mediator, which may invoke multiple lesser task mediators, each of which may invoke additional lesser task mediators. Task mediators perform functions ranging from a lower level function, such as detecting a dial tone, to a higher level function, such as connecting a customer to an agent and providing all relevant customer information to the agent. The calling of a higher level task mediator automatically invokes the calling of the lesser, lower level task mediators necessary to accomplish the specified task. Thus, the various task mediators automatically reconstruct the connections necessary to accomplish the further communications. The communications may be by telephone, conventional mail, facsimile, electronic mail, internet, wireless, satellite, cable TV, radio, or other means and may involve audio, video, text, facsimile or electronic mail documents, pictures, spreadsheets, etc.

17 Claims, 7 Drawing Sheets





US00RE36416E

United States Patent

[19]

[11] E

Patent Number: **Re. 36,416**

Szlam et al.

[45] **Reissued Date of Patent: Nov. 30, 1999**

[54] **METHOD AND APPARATUS FOR DYNAMIC AND INTERDEPENDENT PROCESSING OF INBOUND CALLS AND OUTBOUND CALLS**

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[75] Inventors: **Aleksander Szlam**, Norcross; **James W. Crooks, Jr.**, Atlanta; **Dean H. Harris**, Marietta, all of Ga.

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[73] Assignee: **Inventions, Inc.**, Norcross, Ga.

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 "Preliminary Product Specification: ACM", Version 1.1, Teknekron Infoswitch Corporation, Document No. 610034, pp. 1-60, May 1987.

[21] Appl. No.: **08/449,887**

[22] Filed: **May 25, 1995**

Related U.S. Patent Documents

Reissue of:

[64] Patent No.: **5,214,688**
 Issued: **May 25, 1993**
 Appl. No.: **07/553,489**
 Filed: **Jun. 5, 1990**

Primary Examiner—Huyen Le
Attorney, Agent, or Firm—Smith, Gambrell & Russell, LLP; Charles L. Warner

[51] **Int. Cl.⁶** **H04M 1/64**
 [52] **U.S. Cl.** **379/88.09; 374/88.22; 374/112; 374/137**
 [58] **Field of Search** **379/88.09, 69, 379/84, 88.22, 89, 112, 113, 137, 139, 212, 213, 214, 218, 265, 266, 302, 303**

[57] ABSTRACT

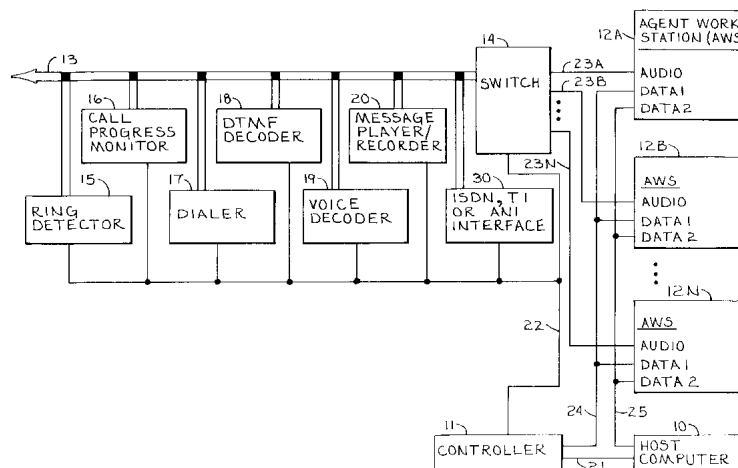
A method for optimizing the pacing and processing of inbound calls and outbound calls. Statistics are generated concerning inbound calls and outbound calls, and concerning the performance of each agent for inbound calls and outbound calls. Separate statistics concerning inbound calls and outbound calls allow a more accurate prediction of call pacing and handling requirements and of the availability of an agent so as to maximize the productivity of each agent and control the on-hold time of inbound and outbound calls. Each trunk line is designated for inbound calls or outbound calls and the status of each trunk is monitored. If all of the trunks allocated to inbound service are in use then some of the trunks designated for outbound service are redesignated for inbound service. If more than a predetermined number of trunks designated for inbound service are not in use then some of these trunks will be redesignated for outbound service. Therefore, the rate of answering of inbound calls and the rate of placement of outbound calls, and the allocation of trunks between inbound calls and outbound calls are driven by the frequency, duration and number of calls and user-selectable options.

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92 Claims, 8 Drawing Sheets





US005963635A

United States Patent [19]

[11] Patent Number: **5,963,635**

Szlam et al.

[45] Date of Patent: **Oct. 5, 1999**

[54] **METHOD AND APPARATUS FOR PROVIDING RESULT-ORIENTED CUSTOMER SERVICE**

5,517,566	5/1996	Smith et al.	379/266 X
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5,790,650	8/1998	Dunn et al.	379/269 X

[75] Inventors: **Aleksander Szlam**, Norcross; **James E. Owen**, Smyrna, both of Ga.

Primary Examiner—Harry S. Hong
Attorney, Agent, or Firm—Charles L. Warner; Smith, Gambrell & Russell

[73] Assignee: **Inventions, Inc.**, Norcross, Ga.

[57] ABSTRACT

[21] Appl. No.: **08/764,324**

The automated customer service system maintains and uses a list of available resources, such as an agent qualification profile, in conjunction with a customer sensitivity profile, to automatically assign available resources, such as agents, to the various campaigns. The agent qualification profile identifies any special skills or qualifications that an agent may possess, such as language skills, type of voice, efficiency, and type of call processing skills. The customer sensitivity profile contains information regarding the manner, time and date, and location for contact which are preferred by the customer. The system administrator devises a strategy script based upon the customer sensitivity requirements and the agent qualifications. The strategy script determines which resources, such as agents, meet which requirements, and whether there are adequate resources to handle the requirements of concurrent campaigns. The strategy script also provides for assignment of the resources in accordance with a preplanned priority or procedure in the event that there are not adequate resources available.

[22] Filed: **Dec. 12, 1996**

Related U.S. Application Data

[62] Division of application No. 08/318,506, Oct. 5, 1994, Pat. No. 5,594,791.

[51] **Int. Cl.**⁶ **H04Q 3/64**; H04M 3/00; H04M 3/42

[52] **U.S. Cl.** **379/309**; 379/216; 379/266; 379/355

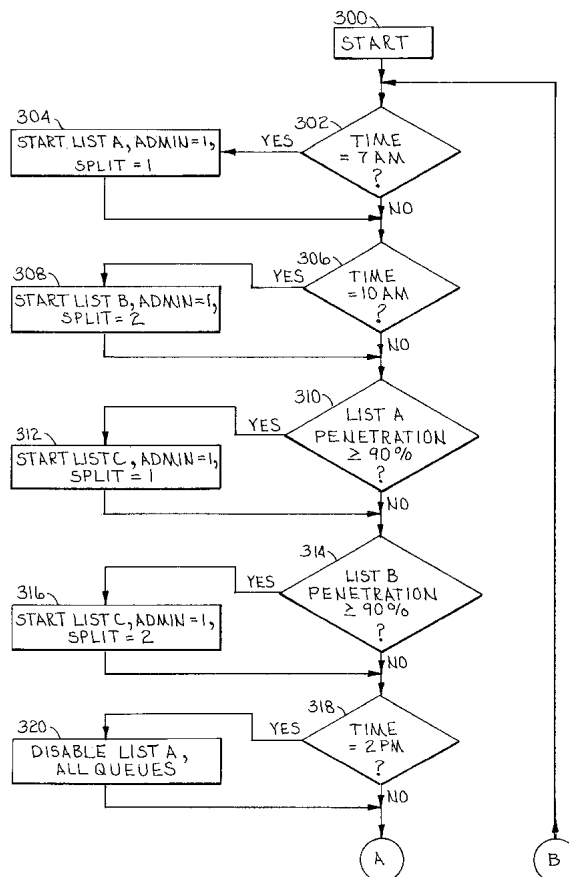
[58] **Field of Search** 379/92, 201, 216, 379/265, 266, 309, 355, 92.01, 92.02

[56] References Cited

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5,436,965	7/1995	Grossman et al.	379/266

34 Claims, 13 Drawing Sheets





US005828731A

United States Patent [19]

[11] **Patent Number:** **5,828,731**

Szlam et al.

[45] **Date of Patent:** ***Oct. 27, 1998**

[54] **METHOD AND APPARATUS FOR NON-OFFENSIVE TERMINATION OF AN OUTBOUND CALL AND FOR DETECTION OF AN ANSWER OF AN OUTBOUND CALL BY AN ANSWERING MACHINE**

5,430,792 7/1995 Jesurum et al. 379/265

Primary Examiner—Fan S. Tsang
Attorney, Agent, or Firm—Smith, Gambrell & Russell; Charles L. Warner, II

[75] Inventors: **Aleksander Szlam**, Norcross; **Chester P. Quinn**, Chamblee, both of Ga.

[57] **ABSTRACT**

[73] Assignee: **Inventions, Inc.**

A method and an apparatus are disclosed which provide for non-offensive termination of an outbound call which has been answered when an agent is not available to handle said outbound call. An outbound call is placed (10) and a determination is made (11) as to whether the call has been answered. If the call has been answered then a determination is made (12) as to whether the call was answered by a person or an answering machine. If the call was answered by a person then a determination is made as to whether an agent is available to handle said outbound call. If an agent is available then the agent is connected (13) to the outbound call. If an agent is not available then a termination message is played (15). If the call was answered by an answering machine then, depending upon a user-selected option (16), a termination message will be played (15) or an interactive session will be started (17). Also disclosed are a method and an apparatus for detecting an answering machine. The duration of a noise level signal is measured, the duration of a sound level signal is measured, and if the noise level signal is followed by a sound level signal, or if the sound level signal duration exceeds a predetermined duration, then the call is deemed to have been answered by an answering machine.

[*] Notice: The term of this patent shall not extend beyond the expiration date of Pat. No. 5,581,602.

[21] Appl. No.: **754,151**

[22] Filed: **Nov. 22, 1996**

Related U.S. Application Data

[63] Continuation of Ser. No. 372,889, Jan. 13, 1995, Pat. No. 5,581,602, which is a continuation of Ser. No. 17,108, Feb. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 901,436, Jun. 19, 1992, abandoned.

[51] **Int. Cl.**⁶ **H04M 1/64**

[52] **U.S. Cl.** **379/88; 379/265**

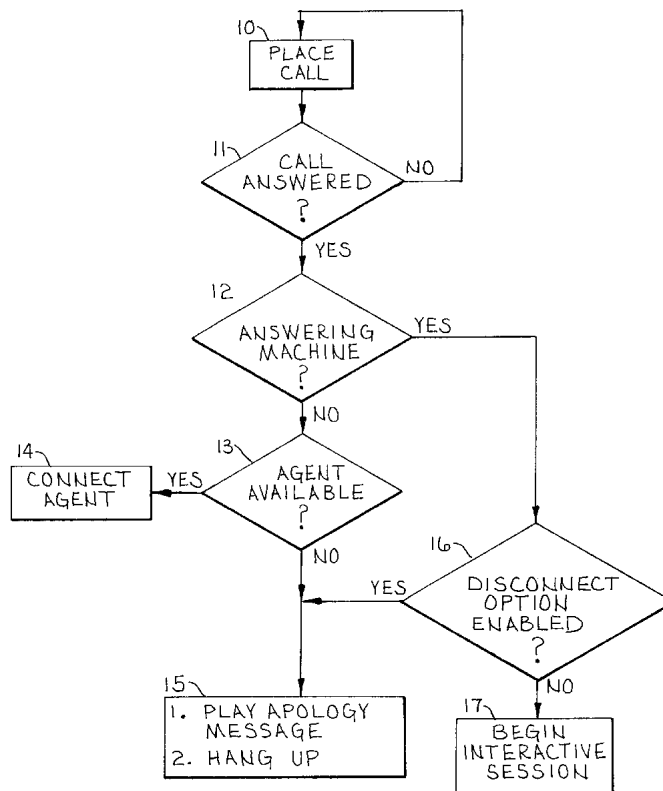
[58] **Field of Search** 379/67, 88, 89, 379/92, 196, 197, 133, 265, 266, 309

[56] **References Cited**

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9 Claims, 13 Drawing Sheets





US005675637A

United States Patent [19]

[11] Patent Number: **5,675,637**

Szlam et al.

[45] Date of Patent: **Oct. 7, 1997**

- [54] **METHOD FOR AUTOMATICALLY OBTAINING AND PRESENTING DATA FROM MULTIPLE DATA SOURCES**
- [75] Inventors: **Aleksander Szlam**, Norcross; **James E. Owen**, Smyrna, both of Ga.
- [73] Assignee: **Inventions, Inc.**, Norcross, Ga.
- [21] Appl. No.: **441,830**
- [22] Filed: **May 16, 1995**
- [51] Int. Cl.⁶ **H04M 3/22**
- [52] U.S. Cl. **379/142; 379/96; 379/112; 379/122; 379/127; 379/201; 379/265**
- [58] **Field of Search** 379/201, 202, 379/265, 266, 122, 96, 136, 213, 218, 214, 247, 309, 112, 34, 35, 113, 84, 88, 97, 219, 220, 142, 67; 375/279, 127, 112, 196, 94, 96, 212; 395/200.03, 200.09, 600; 370/60, 62

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5,533,108	7/1996	Harris et al.	379/265

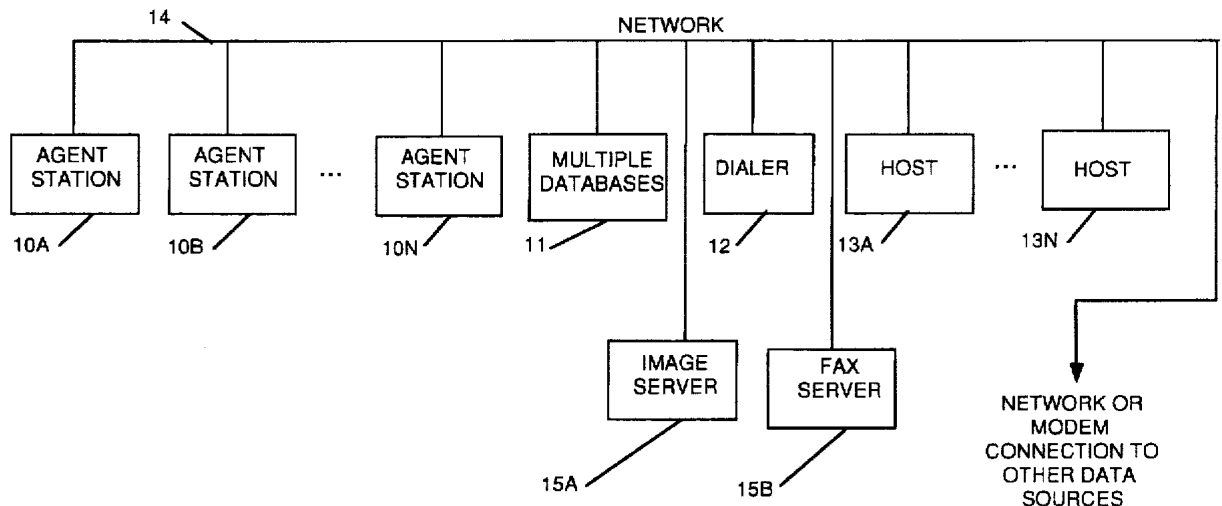
Primary Examiner—Krista M. Zele
Assistant Examiner—Scott Wolinsky
Attorney, Agent, or Firm—Jones & Askew, LLP

[57] ABSTRACT

A method for automatically obtaining, consolidating and displaying the information from a plurality of information sources. An agent workstation receives the initial information item and then sends this information item to the sources specified, receives additional information items from these sources, and displays or presents the information items received. If the initial information item is not adequate to obtain all of the information items desired then the information items received from one source are also used to obtain other information items from other sources so that all of the desired information items are obtained.

19 Claims, 10 Drawing Sheets

- [56] **References Cited**
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US005594791A

United States Patent [19]

[11] Patent Number: **5,594,791**

Szlam et al.

[45] Date of Patent: **Jan. 14, 1997**

[54] **METHOD AND APPARATUS FOR PROVIDING RESULT-ORIENTED CUSTOMER SERVICE**

[75] Inventors: **Aleksander Szlam**, Norcross; **James E. Owen**, Smyrna, both of Ga.

[73] Assignee: **Inventions, Inc.**, Norcross, Ga.

[21] Appl. No.: **318,506**

[22] Filed: **Oct. 5, 1994**

[51] Int. Cl.⁶ **H04M 3/00**; H04M 3/42

[52] U.S. Cl. **379/265**; 379/201; 379/216; 379/309; 379/355

[58] Field of Search 379/91, 92, 93, 379/94, 100, 201, 216, 265, 266, 309, 355

[56] **References Cited**

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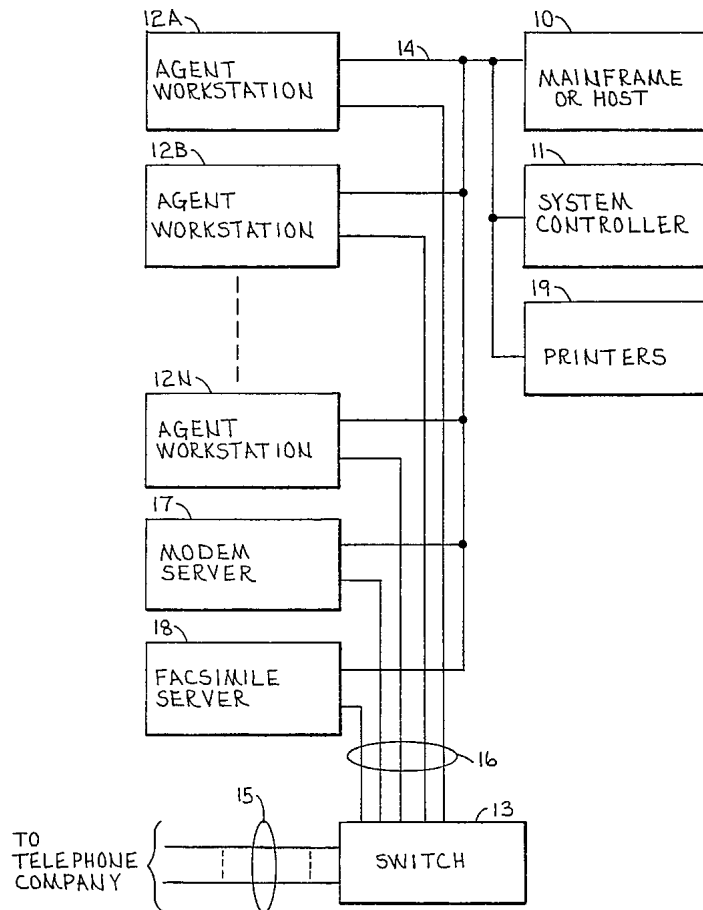
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5,185,782	2/1993	Srinivasan	379/216 X
5,343,518	8/1994	Kneipp	379/355
5,436,965	7/1995	Grossman et al.	379/309 X

Primary Examiner—Jeffery Hofsass
Assistant Examiner—Harry S. Hong
Attorney, Agent, or Firm—Jones & Askew

[57] **ABSTRACT**

An automated customer service system which maintains and uses a customer sensitivity profile to contact the customer in a manner, at a time and date, and at a location which are preferred by the customer. This maximizes the likelihood that the customer will be favorably responsive to the contact, whether the contact be to make a sale, to discuss collection of a balance due, or just to obtain current information about the customer. The automated customer service system also maintains and uses a list of available resources, such as an agent qualification profile, in conjunction with the customer sensitivity profile, to automatically assign available resources, such as agents, to the various campaigns. The agent qualification profile identifies any special skills or qualifications that an agent may possess, such as language skills, type of voice, efficiency, and type of call processing skills. The system administrator devises a strategy script based upon the customer sensitivity requirements and the agent qualifications. The strategy script determines which resources, such as agents, meet which requirements, and whether there are adequate resources to handle the requirements of concurrent campaigns. The strategy script also provides for assignment of the resources in accordance with a preplanned priority or procedure in the event that there are not adequate resources available.

25 Claims, 13 Drawing Sheets





US005581602A

United States Patent [19]

[11] **Patent Number:** 5,581,602

Szlam et al.

[45] **Date of Patent:** Dec. 3, 1996

[54] **NON-OFFENSIVE TERMINATION OF A CALL DETECTION OF AN ANSWERING MACHINE**

Primary Examiner—Krista M. Zele
Assistant Examiner—Fan Tsang
Attorney, Agent, or Firm—Jones & Askew

[75] Inventors: Aleksander Szlam, Norcross; Chester P. Quinn, Chamblee, both of Ga.

[57] **ABSTRACT**

[73] Assignee: Inventions, Inc., Norcross, Ga.

A method and an apparatus are disclosed which provide for non-offensive termination of an outbound call which has been answered when an agent is not available to handle said outbound call. An outbound call is placed (10) and a determination is made (11) as to whether the call has been answered. If the call has been answered then a determination is made (12) as to whether the call was answered by a person or an answering machine. If the call was answered by a person then a determination is made as to whether an agent is available to handle said outbound call. If an agent is available then the agent is connected (13) to the outbound call. If an agent is not available then a termination message is played (15). If the call was answered by an answering machine then, depending upon a user-selected option (16), a termination message will be played (15) or an interactive session will be started (17). Also disclosed are a method and an apparatus for detecting an answering machine. The duration of a noise level signal is measured, the duration of a sound level signal is measured, and if the noise level signal is followed by a sound level signal, or if the sound level signal duration exceeds a predetermined duration, then the call is deemed to have been answered by an answering machine.

[21] Appl. No.: 372,889

[22] Filed: Jan. 13, 1995

Related U.S. Application Data

[63] Continuation of Ser. No. 17,108, Feb. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 901,436, Jun. 19, 1992, abandoned.

[51] Int. Cl.⁶ H04M 1/64

[52] U.S. Cl. 379/67; 379/92; 379/196; 379/265

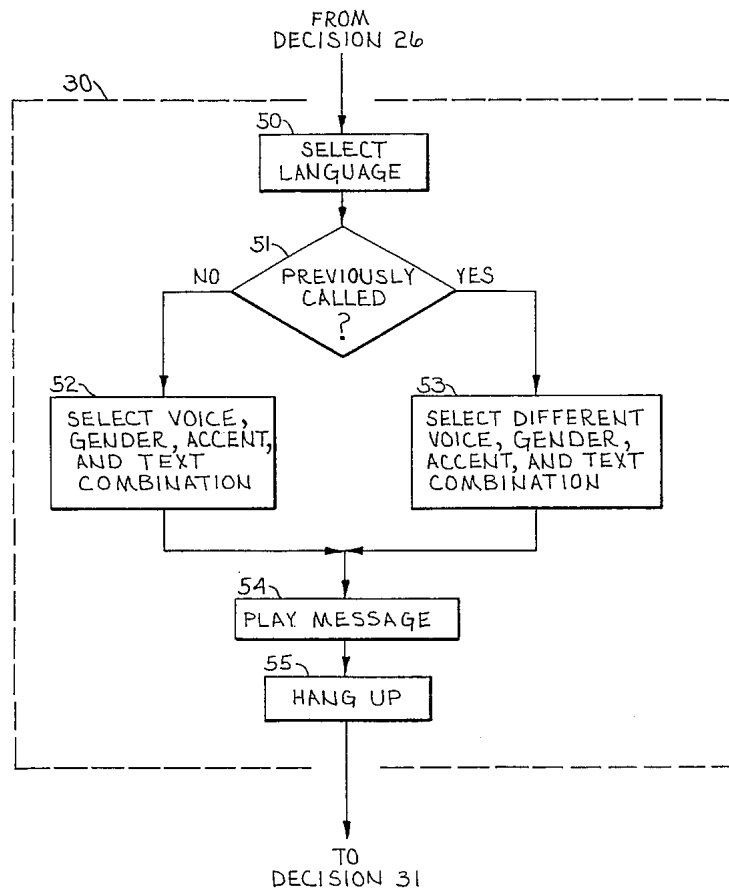
[58] Field of Search 379/67, 88, 89, 379/92, 196, 197, 133, 221, 265, 266, 309

[56] References Cited

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7 Claims, 13 Drawing Sheets





US005511112A

United States Patent [19]

[11] Patent Number: **5,511,112**

Szlam

[45] Date of Patent: **Apr. 23, 1996**

[54] **AUTOMATED VOICE SYSTEM FOR IMPROVING AGENT EFFICIENCY AND IMPROVING SERVICE TO PARTIES ON HOLD**

5,181,236	1/1993	LaVallee et al.	379/89
5,214,688	5/1993	Szlam et al.	379/137
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[75] Inventor: **Aleksander Szlam**, Norcross, Ga.

Advertisement by Rockwell International, Downers Grove, Ill., p. 17 of the Apr. 1991 Issue of Inbound/Outbound Magazine.

[73] Assignee: **Inventions, Inc.**, Norcross, Ga.

Inter Dial Brochure by Intervoice, Dallas, Tex., believed to be dated Jan. 1991.

[21] Appl. No.: **236,225**

[22] Filed: **Apr. 29, 1994**

Primary Examiner—Jeffery Hofsass
Assistant Examiner—Fan Tsang
Attorney, Agent, or Firm—Jones & Askew

Related U.S. Application Data

[63] Continuation of Ser. No. 703,158, May 20, 1991, Pat. No. 5,309,505.

[51] **Int. Cl.⁶** **H04M 1/274**; H04M 11/10

[52] **U.S. Cl.** **379/88**; 379/77; 379/162; 379/214; 379/265; 379/266

[58] **Field of Search** 379/67, 88, 89, 379/77, 162, 214, 265, 266

[57] ABSTRACT

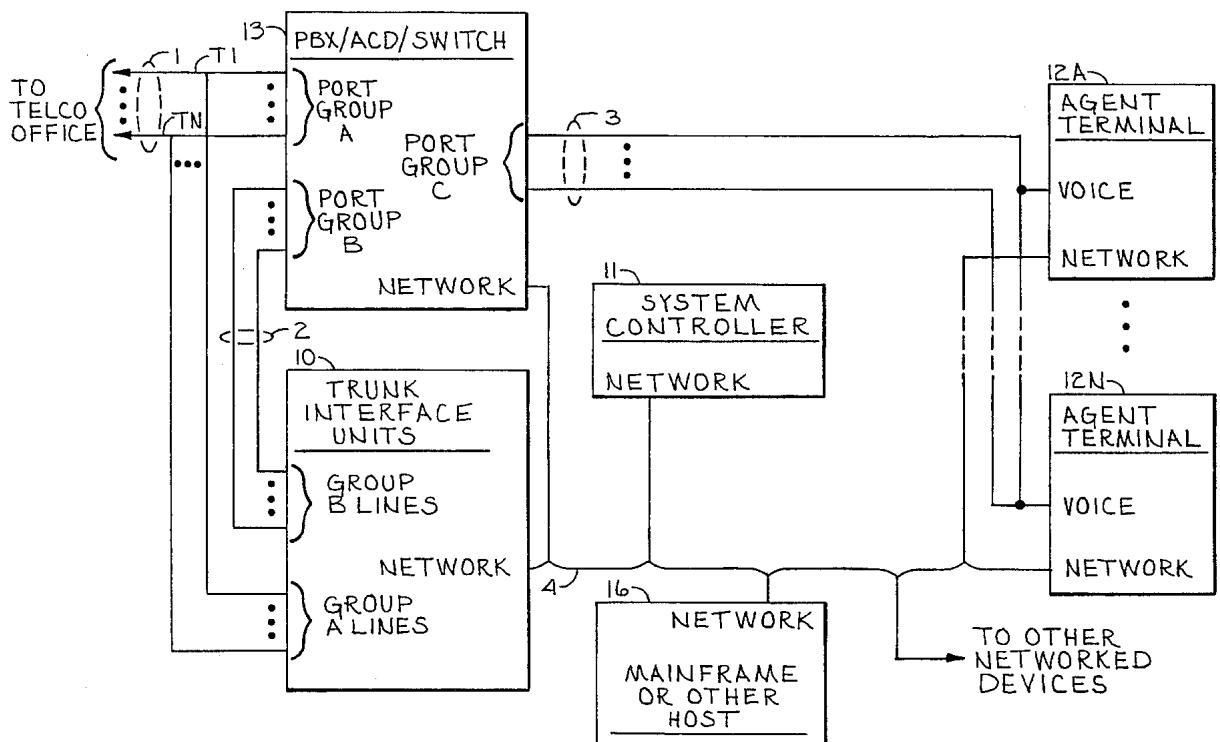
A method and an apparatus for improving agent efficiency by reducing non-productive time such as time on hold and time for wrap-up statements. After an agent has been connected to a call the agent may determine that automated handling of the call is appropriate. Depending upon the status of the call the agent may specify that the call has been essentially completed or that the agent is on hold. The agent may speak the name of the connected party and this will be recorded. Then the agent is disconnected from the call and a message playing device, which may also replay the spoken name, is activated. If the response from the connected party indicates that an agent's attention is again needed then the same or a different agent is connected to the call. In addition, a party on hold is provided an estimate of the time before an agent becomes available and/or the number of parties ahead in the holding queue.

[56] References Cited

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4,697,282	9/1987	Winter et al.	379/88
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4 Claims, 9 Drawing Sheets





US005309505A

United States Patent [19]

[11] Patent Number: **5,309,505**

Szlam et al.

[45] Date of Patent: **May 3, 1994**

[54] **AUTOMATED VOICE SYSTEM FOR IMPROVING AGENT EFFICIENCY AND IMPROVING SERVICE TO PARTIES ON HOLD**

[75] Inventors: **Aleksander Szlam**, Norcross; **Charles L. Warner, II**, Stone Mountain, both of Ga.

[73] Assignee: **Inventions, Inc.**, Norcross, Ga.

[21] Appl. No.: **703,158**

[22] Filed: **May 20, 1991**

[51] Int. Cl.⁵ **H04M 1/274; H04M 11/10**

[52] U.S. Cl. **379/88; 379/67; 379/77; 379/162; 379/214; 379/265; 379/266**

[58] Field of Search **379/67, 88, 162, 265, 379/309, 77, 214, 266**

[56] **References Cited**

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4,797,911	1/1989	Szlam et al.	379/67
4,858,120	8/1989	Samuelson	379/309
5,020,095	5/1991	Morganstein et al.	379/67
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Advertisement by Rockwell International, Downers

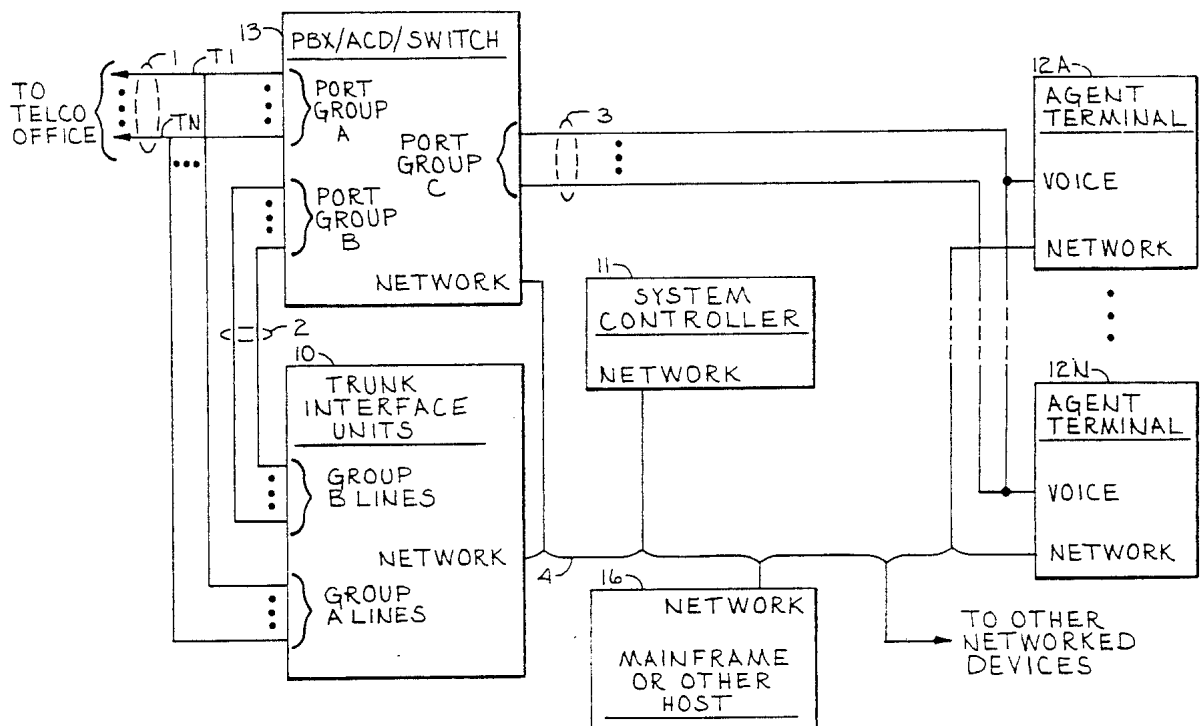
Grove, Ill., p. 17 of the April 1991 Issue of Inbound-/Outbound Magazine.
Inter Dial Brochure by Intervoice, Dallas, Tex., believed to be dated Jan. 1991.

Primary Examiner—James L. Dwyer
Assistant Examiner—Fan Tsang
Attorney, Agent, or Firm—Jones & Askew

[57] **ABSTRACT**

A method and an apparatus for improving agent efficiency by reducing non-productive time such as time on hold and time for wrap-up statements. After an agent has been connected to a call the agent may determine that automated handling of the call is appropriate. Depending upon the status of the call the agent may specify that the call has been essentially completed or that the agent is on hold. The agent may speak the name of the connected party and this will be recorded. Then the agent is disconnected from the call and a message playing device, which may also replay the spoken name, is activated. If the response from the connected party indicates that an agent's attention is again needed then the same or a different agent is connected to the call. In addition, a party on hold is provided an estimate of the time before an agent becomes available and/or the number of parties ahead in the holding queue.

24 Claims, 9 Drawing Sheets





US005214688A

United States Patent [19]

[11] Patent Number: **5,214,688**

Szlam et al.

[45] Date of Patent: **May 25, 1993**

- [54] **METHOD AND APPARATUS FOR DYNAMIC AND INTERDEPENDENT PROCESSING OF INBOUND CALLS AND OUTBOUND CALLS**
- [75] Inventors: **Aleksander Szlam, Norcross; James W. Crooks, Jr.; Dean H. Harris, both of Marietta, all of Ga.**
- [73] Assignee: **Inventions, Inc., Norcross, Ga.**
- [21] Appl. No.: **533,489**
- [22] Filed: **Jun. 5, 1990**
- [51] Int. Cl.⁵ **H04M 1/64**
- [52] U.S. Cl. **379/67; 379/88; 379/112; 379/137**
- [58] **Field of Search** **379/67, 69, 84, 88, 379/112, 113, 212, 213, 214, 218, 265, 266, 302, 303, 137, 139, 89**

5,062,103 10/1991 Davidson et al. 379/265

Primary Examiner—Jin F. Ng
Assistant Examiner—Huyen D. Le
Attorney, Agent, or Firm—Jones & Askew

[57] ABSTRACT

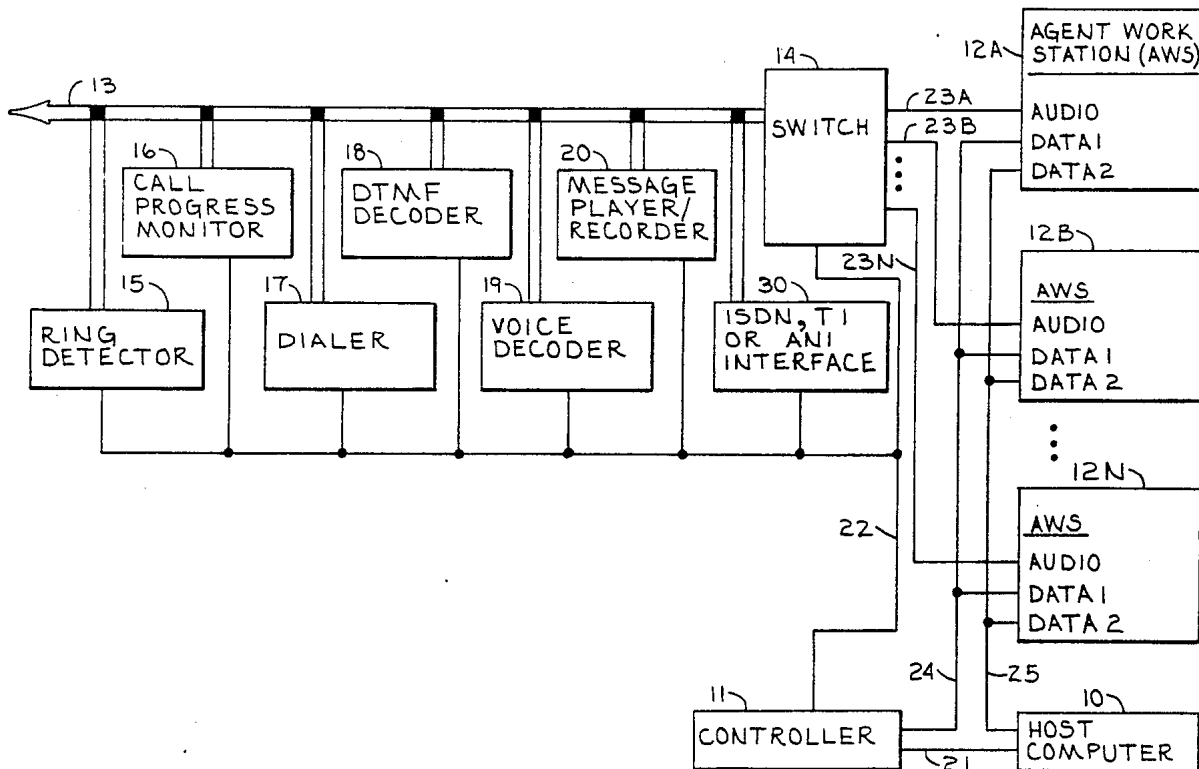
A method for optimizing the pacing and processing of inbound calls and outbound calls. Statistics are generated concerning inbound calls and outbound calls, and concerning the performance of each agent for inbound calls and outbound calls. Separate statistics concerning inbound calls and outbound calls allow a more accurate prediction of call pacing and handling requirements and of the availability of an agent so as to maximize the productivity of each agent and control the on-hold time of inbound and outbound calls. Each trunk line is designated for inbound calls or outbound calls and the status of each trunk is monitored. If all of the trunks allocated to inbound service are in use then some of the trunks designated for outbound service are redesignated for inbound service. If more than a predetermined number of trunks designated for inbound service are not in use then some of these trunks will be redesignated for outbound service. Therefore, the rate of answering of inbound calls and the rate of placement of outbound calls, and the allocation of trunks between inbound calls and outbound calls are driven by the frequency, duration and number of calls and user-selectable options.

[56] References Cited

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4,894,857	1/1990	Szlam et al.	379/216
4,939,771	7/1990	Brown et al.	379/214
4,939,773	7/1990	Katz	379/204

73 Claims, 8 Drawing Sheets



[54] **METHOD FOR AVOIDING CALL BLOCKING**

[75] **Inventors:** Aleksander Szlam, Norcross; James W. Crooks, Jr., Marietta; Charles L. Warner, II, Stone Mountain, all of Ga.

[73] **Assignee:** Inventions, Inc., Norcross, Ga.

[21] **Appl. No.:** 478,619

[22] **Filed:** Feb. 12, 1990

[51] **Int. Cl.:** H04M 15/10; H04M 9/00

[52] **U.S. Cl.:** 379/196; 379/197; 379/133; 379/221; 379/92

[58] **Field of Search:** 379/199, 196, 197, 198, 379/188, 142, 201, 221, 245, 246, 249, 92, 355, 100, 95, 88, 127, 133, 134, 140

[56] **References Cited**

U.S. PATENT DOCUMENTS

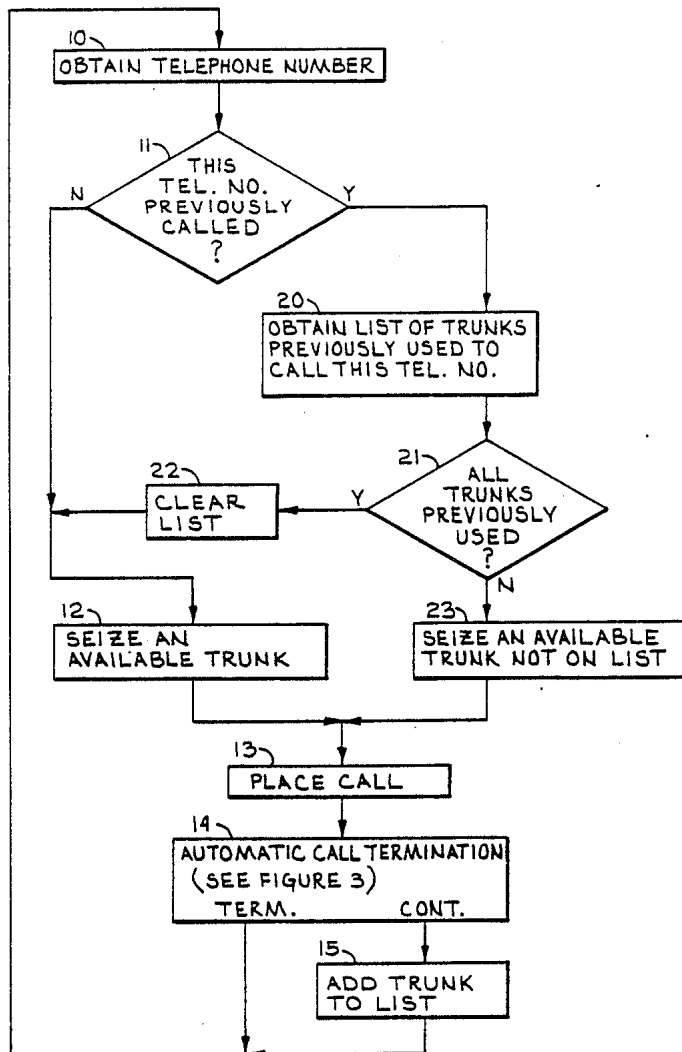
4,797,911 1/1989 Szlam et al. 379/92 X
 4,894,857 1/1990 Szlam et al. 379/67

Primary Examiner—James L. Dwyer
Attorney, Agent, or Firm—Jones, Askew & Lunsford

[57] **ABSTRACT**

Methods for avoiding a call blocking feature. In a first method a list is kept for the trunks previously used to call a particular telephone number. Each time that particular telephone number is called a different trunk, not on that list, is used to place the call. The list is cleared and restarted whenever all the trunks have been used. In a second method a list is kept for trunks for which a call blocking message has been received when an attempt was made to call that telephone number. Each time that particular telephone number is called a trunk which is not on that list is used to place the call. Only non-blocked trunks are used to call a telephone number.

62 Claims, 4 Drawing Sheets



- [54] **METHOD AND APPARATUS FOR CUSTOMER ACCOUNT SERVICING**
- [75] **Inventors:** Aleksander Szlam, Norcross; James W. Crooks, Jr., Marietta, both of Ga.; Curtis G. Marks, Eden Prairie, Minn.; Charles L. Warner, II, Stone Mountain, Ga.
- [73] **Assignee:** Inventions Inc., Norcross, Ga.
- [21] **Appl. No.:** 287,008
- [22] **Filed:** Dec. 20, 1988

Related U.S. Application Data

- [63] Continuation-in-part of Ser. No: 62,944, Jun. 16, 1987, Pat. No. 4,797,911.
- [51] **Int. Cl.⁴** H04M 1/276; H04M 11/00
- [52] **U.S. Cl.** 379/67; 379/84; 379/92; 379/216; 379/246
- [58] **Field of Search** 379/67, 69, 84, 88, 379/92, 127, 216, 246

References Cited

U.S. PATENT DOCUMENTS

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4,320,256	3/1982	Freeman	379/73
4,406,925	9/1983	Jordan et al.	379/93
4,438,296	3/1984	Smith	379/69
4,451,700	5/1984	Kempner et al.	379/88
4,599,493	7/1986	Cave	379/247

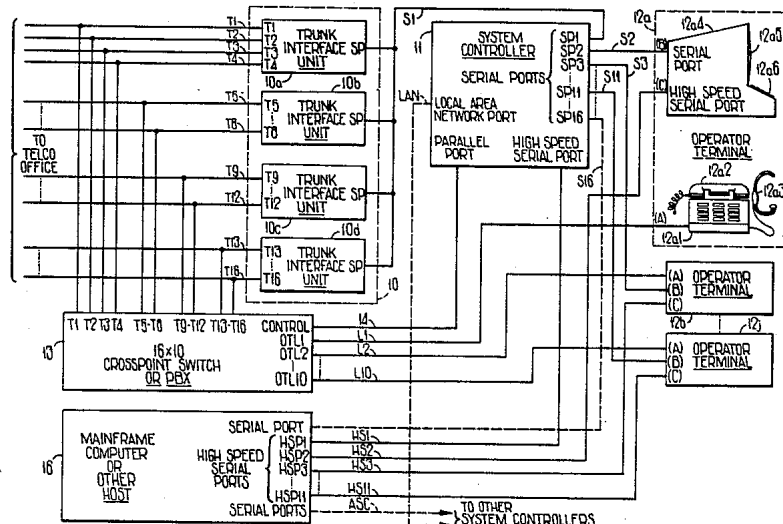
Primary Examiner—Thomas W. Brown
Attorney, Agent, or Firm—Jones, Askew & Lunsford

[57] **ABSTRACT**

A method and an apparatus for retrofitting and extend-

ing or upgrading an existing customer account servicing system to provide for automated handling and processing of both incoming and outgoing calls. A mainframe computer or host (16) contains customer or potential customer account records. A plurality of operator terminals (12) allow the operators to converse with the called or calling party and make changes to the customer account information via a data terminal (12a4). A system controller (11), trunk interface unit (10), operator terminals (12) and cross-point switch or PBX (13) provide a retrofit to an existing system, a mainframe computer (16), to provide for automated handling and processing of both incoming and outgoing calls. The system controller (11) and terminals (12) use the same command and data format structure as that already in use by the existing system and software or programs of mainframe (16). The system controller (11) is transparent to the operation of the mainframe (16) and the operator terminals (12) and allows the system to be upgraded without the necessity of purchasing different software or programs for the mainframe (16). This invention is useful with both new and previously existing operator terminals (12). The system controller (11) monitors and handles both incoming and outgoing calls via the trunk interface units (10) and, when appropriate, causes the cross-point switch or PBX (13) to connect a selected trunk line (T) with an appropriate available operator terminal (12) and causes the customer account record to be displayed on the screen of the operator terminal.

68 Claims, 9 Drawing Sheets



United States Patent [19]

Szlam et al.

[11] Patent Number: **4,797,911**

[45] Date of Patent: **Jan. 10, 1989**

[54] **CUSTOMER ACCOUNT ONLINE SERVICING SYSTEM**

[75] Inventors: Aleksander Szlam, Norcross; James W. Crooks, Jr., Marietta, both of Ga.; Curtis G. Marks, Minneapolis, Minn.

[73] Assignee: Inventions, Inc., Norcross, Ga.

[21] Appl. No.: 62,944

[22] Filed: Jun. 16, 1987

[51] Int. Cl.⁴ H04M 1/274; H04M 11/10

[52] U.S. Cl. 379/67; 379/84; 379/92; 379/216; 379/246

[58] Field of Search 379/67, 69, 88, 216, 379/84, 92, 127, 246

[56] **References Cited**

U.S. PATENT DOCUMENTS

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4,320,256	3/1982	Freeman	379/73
4,406,925	9/1983	Jordan et al.	379/93
4,438,296	3/1984	Smith	379/69
4,451,700	5/1984	Keupner et al.	379/88
4,599,493	7/1986	Cave	379/247

Primary Examiner—Thomas W. Brown

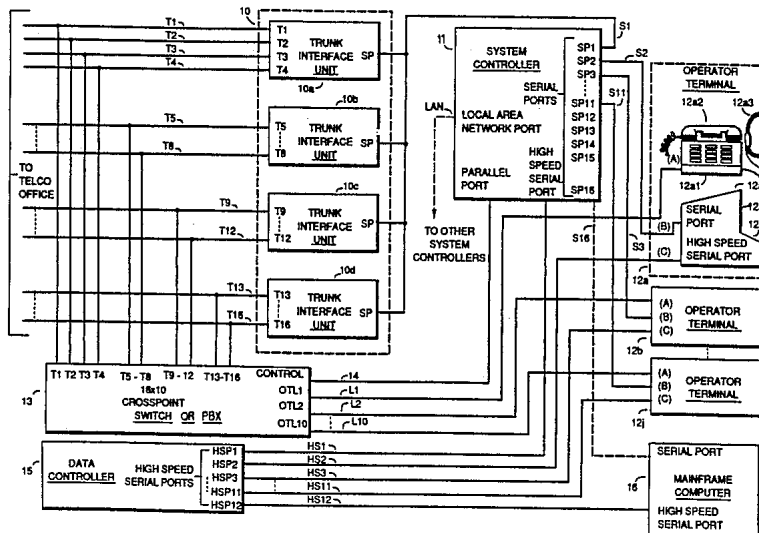
Attorney, Agent, or Firm—Jones, Askew & Lunsford

[57] **ABSTRACT**

A method and an apparatus for direct and immediate updating of customer account information, handling inquiries, and initiating communications is disclosed. A mainframe computer (16) contains customer or potential customer account information such as customer name, customer telephone number, customer account code, customer order status, etc. Mainframe computer

(16) sends batches of customer account information to a system controller (11) via a data controller (15). System controller (11) directs trunk interface units (10a-10d) to dial the customer's telephone number and monitor the status of the outgoing calls. The trunk interface units (10a-10d) advise the system controller (11) when an outgoing call has been answered and, if an operator is available at an operator terminal (12a-12j), the system controller (11) directs a switch (13) to connect the answered trunk (T1-T16) to the available operator terminal and sends abbreviated customer account information to the operator terminal. The operator terminal then requests the full customer account information from the mainframe computer (16) via the data controller (15). The operator at the operator terminal 12 then conducts the necessary business with the customer and makes any desired changes in the customer account information in the mainframe computer (16). The changes are sent by the operator terminal (12), via the data controller (15), to the mainframe computer (16) for immediate updating and storage of the updated account information in the main database. The operator at the operator terminal (12) is relieved of the duties of obtaining the telephone number, dialing telephone number, and waiting for the party to answer, and is therefore utilized more efficiently. Furthermore, the customer account information in mainframe computer (16) is continuously updated and made current so that the operator always has the most current customer account information. Also disclosed is a method and an apparatus for processing of incoming calls. Furthermore, a retrofit device is disclosed for use with existing systems.

73 Claims, 9 Drawing Sheets



United States Patent [19]

Szlam

[11] Patent Number: **4,782,510**

[45] Date of Patent: **Nov. 1, 1988**

[54] **TELEPHONE ANSWERING MACHINE WITH DIGITAL STORAGE OF ANNOUNCEMENTS AND MESSAGES**

[75] Inventor: Aleksander Szlam, Marietta, Ga.

[73] Assignee: Melita Electronic Labs, Inc., Norcross, Ga.

[21] Appl. No.: 2,691

[22] Filed: Jan. 12, 1987

Related U.S. Application Data

[62] Division of Ser. No. 752,053, Jul. 5, 1985, Pat. No. 4,677,663.

[51] Int. Cl.⁴ H04M 1/65

[52] U.S. Cl. 379/88; 379/76; 379/77

[58] Field of Search 379/88, 210, 211, 212, 379/213, 214, 202, 204, 205, 201, 76, 77

[56] References Cited

U.S. PATENT DOCUMENTS

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 4,475,009 10/1984 Rais et al. 379/211

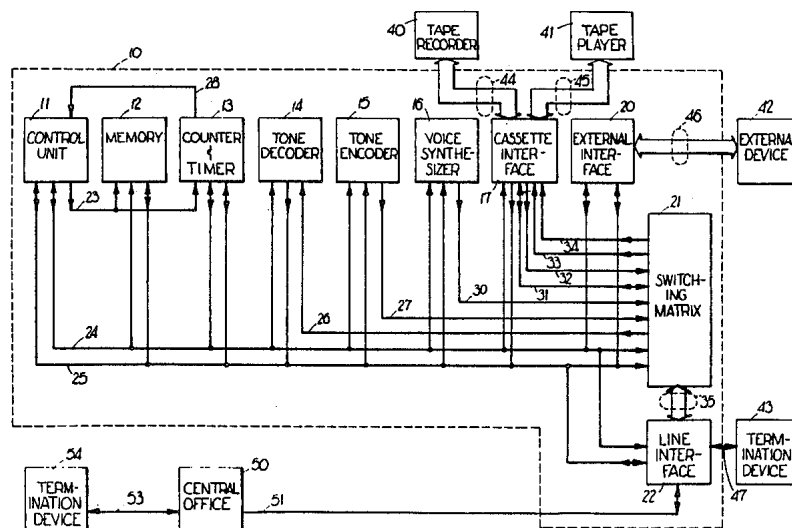
4,600,809 7/1986 Tatsumi et al. 379/88

Primary Examiner—James L. Dwyer
 Attorney, Agent, or Firm—Jones, Askew & Lunsford

[57] ABSTRACT

A telephone answering machine with digital storage of announcements and messages and enhanced message playback features. When an incoming call is detected the line is seized and a predetermined outgoing message is placed upon the telephone line. The outgoing message prompts the calling party to provide a telephone number, a priority code, or other information which can be input via a telephone DTMF keypad. The DTMF tones sent by the calling party are decoded and stored in a memory. When recalled by the user, the numbers corresponding to the DTMF tones are presented to the user as spoken words via a voice synthesizer. In addition, the machine is responsive to a set of commands which allows the user to play back the messages in chronological order or by a selected priority code, advance or backup to a particular message, and record a new outgoing message.

2 Claims, 1 Drawing Sheet



United States Patent [19]

Szlam

[11] Patent Number: **4,742,538**

[45] Date of Patent: **May 3, 1988**

- [54] **CURRENT SOURCE AND OFF-HOOK DETECTOR**
- [75] Inventor: Aleksander Szlam, Marietta, Ga.
- [73] Assignee: Melita Electronic Labs, Inc., Atlanta, Ga.
- [21] Appl. No.: 8,344
- [22] Filed: Jan. 29, 1987

Primary Examiner—James L. Dwyer
 Attorney, Agent, or Firm—Jones, Askew & Lunsford

[57] **ABSTRACT**

The invention relates to circuitry for providing and monitoring the status of telephones, especially those used in conjunction with advanced telephone answering machines, such as is also disclosed herein. The voltage on the extension line leading to the telephone set (termination device) is monitored to determine whether the telephone set is on-hook or off-hook. Also, a tone decoder monitors DTMF signals on the extension line. The telephone set, when off-hook, is normally connected to the subscriber line. However, if a predetermined digit is keyed into the telephone set, the telephone set will be disconnected from the subscriber telephone line and connected to a selectively actuatable current source. The telephone set, being powered by the current source and being disconnected from the subscriber line, can then be used for the control and monitoring of the telephone answering machine. Also, the current source is protected against the application of the subscriber line voltage.

Related U.S. Application Data

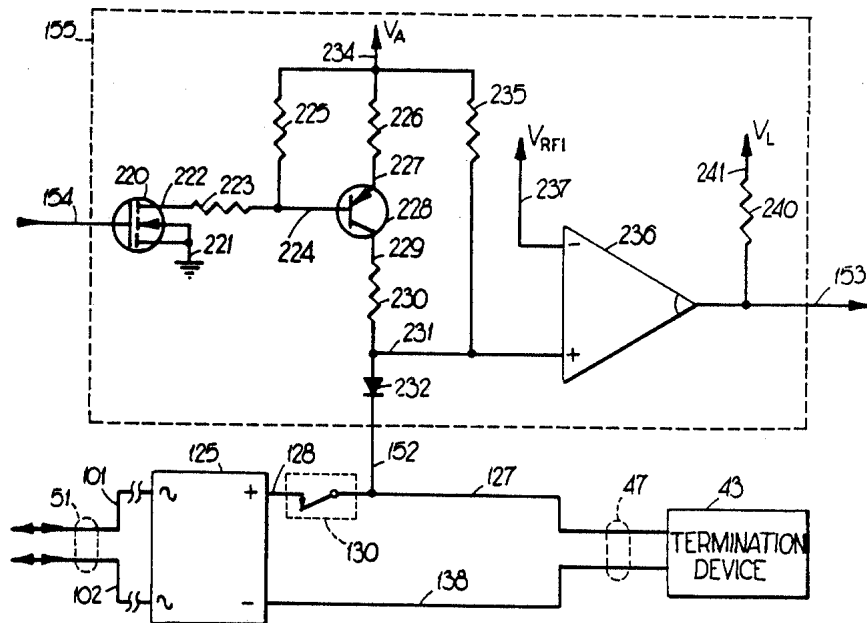
- [62] Division of Ser. No. 752,053, Jul. 5, 1985, Pat. No. 4,677,663.
- [51] Int. Cl.⁴ H04M 1/72
- [52] U.S. Cl. 379/361; 379/387; 379/442; 379/385
- [58] Field of Search 379/79, 80, 81, 361, 379/82, 377, 387, 382, 352, 413, 161, 165, 184, 442

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11 Claims, 6 Drawing Sheets



- [54] TELEPHONE LOOP CURRENT MODULATOR
- [75] Inventor: Aleksander Szlam, Marietta, Ga.
- [73] Assignee: Melita Electronic Labs, Inc., Atlanta, Ga.
- [21] Appl. No.: 14,015
- [22] Filed: Feb. 12, 1987

Related U.S. Application Data

- [62] Division of Ser. No. 752,053, Jul. 5, 1985, Pat. No. 4,677,663.
- [51] Int. Cl.⁴ H04M 19/02
- [52] U.S. Cl. 379/377; 379/387
- [58] Field of Search 379/387, 393, 162, 163, 379/352, 377, 380, 81, 96, 97, 98, 442, 443, 395

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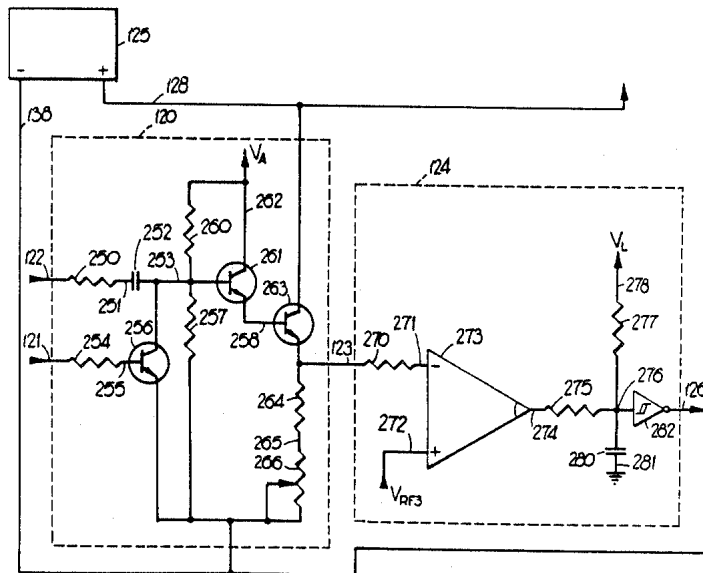
- 4,063,045 12/1977 Greischar 379/98
- 4,440,981 4/1984 Grantland et al. 379/387 X
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Primary Examiner—James L. Dwyer
 Attorney, Agent, or Firm—Jones, Askew & Lunsford

[57] **ABSTRACT**

An improvement to automatic answering and call forwarding features used in telephone communications which allows a user to remotely activate, modify, and deactivate these features. The improvement describes a transformerless means for coupling signals to and from the telephone line without compromising the operation of the telephone line. The apparatus employs a microprocessor controller (11) with memory (12), a tone encoder (15), a toner decoder (14), a voice synthesizer (16), a timer (13), a cassette interface (17), an RS232C interface (20), a switching matrix (21), and a line interface (22). Audio, pulse dial, and tone signals are routed among the components and the telephone line (51) by the switching matrix (21) and line interface (22). The line interface (22) provides a transformerless means for coupling signals to and from the telephone line (51) and also analyzes the status of, and signals present on, the telephone line (51).

14 Claims, 6 Drawing Sheets



[54] RING SIGNAL DISCRIMINATOR

[75] Inventor: Aleksander Szlam, Marietta, Ga.

[73] Assignee: Melita Electronic Labs, Inc.,
Norcross, Ga.

[21] Appl. No.: 3,643

[22] Filed: Mar. 9, 1987

Related U.S. Application Data

[62] Division of Ser. No. 752,053, Jul. 5, 1985, Pat. No. 4,677,665.

[51] Int. Cl.⁴ H04M 3/54

[52] U.S. Cl. 379/211

[58] Field of Search 379/373, 374, 375, 376,
379/386, 82, 211

[56] References Cited

U.S. PATENT DOCUMENTS

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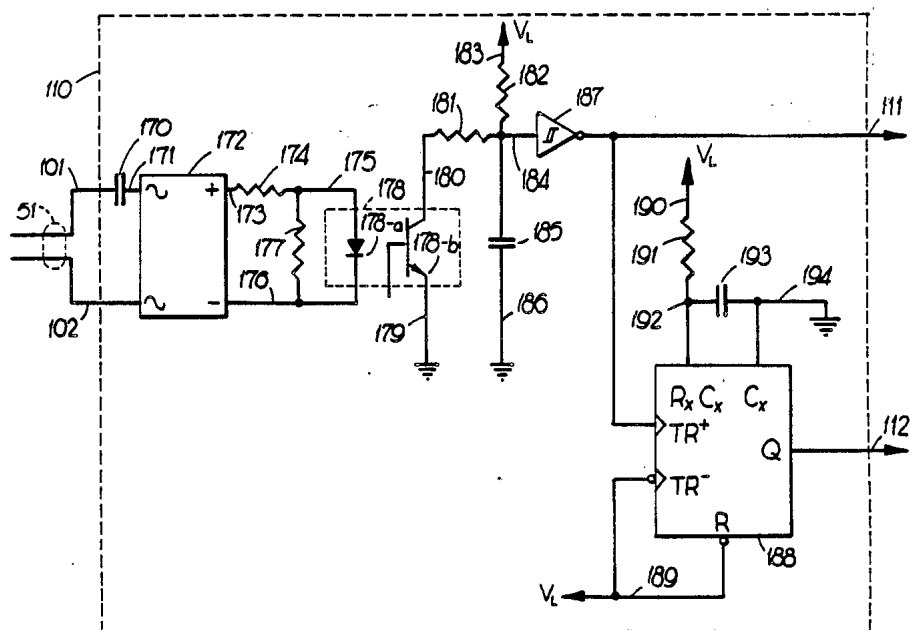
Primary Examiner—James L. Dwyer

Attorney, Agent, or Firm—Jones, Askew & Lunsford

[57] ABSTRACT

An improvement to automatic answering and call forwarding features used in telephone communications which allows a user to remotely activate, modify, and deactivate these features. The improvement describes a transformerless means for coupling signals to and from the telephone line without compromising the operation of the telephone line. The apparatus employs a microprocessor controller (11) with memory (12), a tone encoder (15), a tone decoder (14), a voice synthesizer (16), a timer (13), a cassette interface (17), an RS232C interface (20), a switching matrix (21), and a line interface (22). Audio, pulse dial, and tone signals are routed among the components and the telephone line (51) by the switching matrix (21) and line interface (22). The line interface (22) provides a transformerless means for coupling signals to and from the telephone line (51) and also analyzes the status of, and signals present on, the telephone line (51).

6 Claims, 8 Drawing Figures



[54] **TELEPHONE ANSWERING AND CALL FORWARDING IMPROVEMENT**

[75] **Inventor:** Aleksander Szlam, Marietta, Ga.

[73] **Assignee:** Melita Electronic Labs, Inc., Norcross, Ga.

[21] **Appl. No.:** 752,053

[22] **Filed:** Jul. 5, 1985

[51] **Int. Cl.4** H04M 3/54

[52] **U.S. Cl.** 379/211; 379/387

[58] **Field of Search** 179/18 BE, 18 BD, 18 B, 179/84 VF, 2 A; 370/62; 379/211, 157, 387

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,475,009 10/1984 Rais et al. 179/18 BE X

Primary Examiner—James L. Dwyer

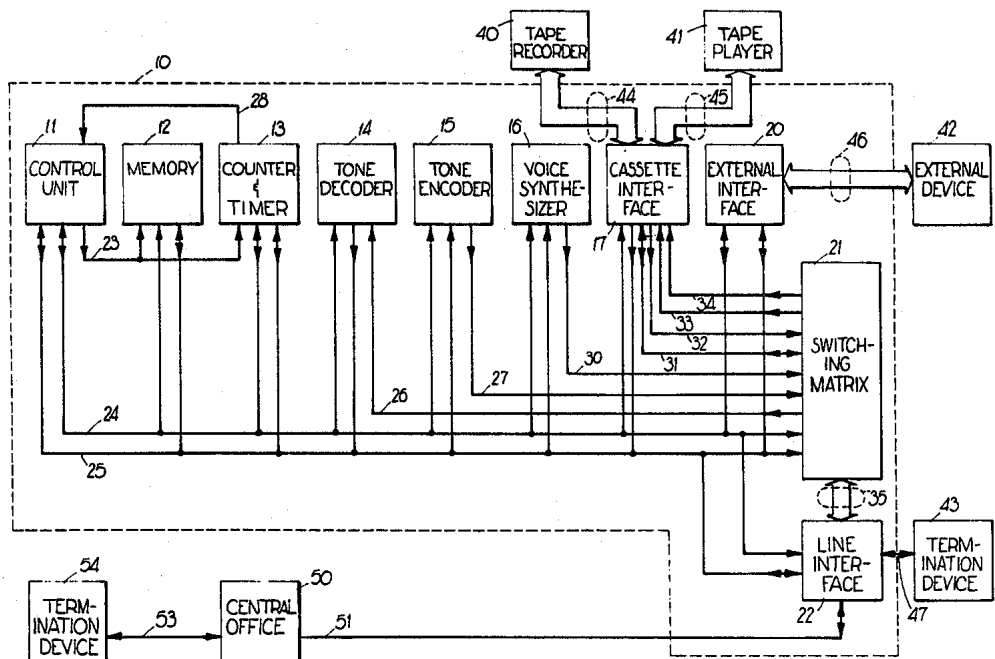
Attorney, Agent, or Firm—Jones & Askew

[57] **ABSTRACT**

An improvement to automatic answering and call for-

warding features used in telephone communications which allows a user to remotely activate, modify, and deactivate these features. The improvement describes a transformerless means for coupling signals to and from the telephone line without compromising the operation of the telephone line. The apparatus employs a micro-processor controller (11) with memory (12), a tone encoder (15), a tone decoder (14), a voice synthesizer (16), a timer (13), a cassette interface (17), an RS232C interface (20), a switching matrix (21), and a line interface (22). Audio, pulse dial, and tone signals are routed among the components and the telephone line (51) by the switching matrix (21) and line interface (22). The line interface (22) provides a transformerless means for coupling signals to and from the telephone line (51) and also analyzes the status of, and signals present on, the telephone line (51).

14 Claims, 8 Drawing Figures



- [54] **DETECTING SIGNALS WITHIN A PASSBAND ON A TELEPHONE LINE**
- [75] **Inventors:** Aleksander Szlam, Marietta; Chester P. Quinn, Chamblee, both of Ga.
- [73] **Assignee:** Melita Electronic Labs, Inc., Atlanta, Ga.
- [21] **Appl. No.:** 609,925
- [22] **Filed:** May 14, 1984

Related U.S. Application Data

- [62] Division of Ser. No. 415,711, Sep. 7, 1982, Pat. No. 4,477,698.
- [51] **Int. Cl.³** H04M 1/00
- [52] **U.S. Cl.** 179/84 R; 179/81 R
- [58] **Field of Search** 179/81 R, 81 B, 81 C, 179/84 R, 84 A, 84 L, 84 SS, 84 T, 84 VF, 89

[56] **References Cited**

U.S. PATENT DOCUMENTS

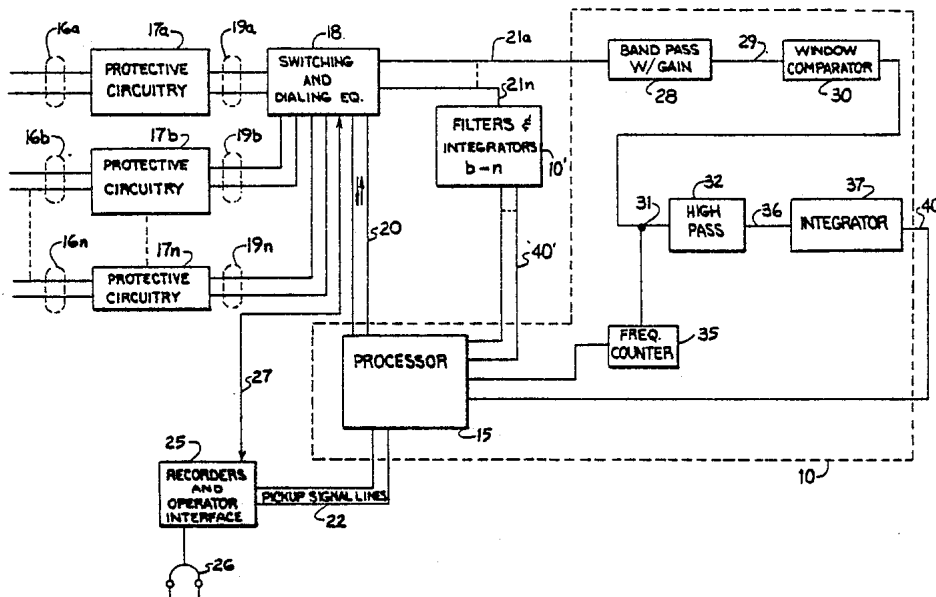
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Primary Examiner—James L. Dwyer
Attorney, Agent, or Firm—Jones & Askew

[57] **ABSTRACT**

An improved combination of a hardware and digital signal processing filter for detecting pick-up of a telephone call, solely through audio information on the telephone line. The apparatus employs a high gain band pass filter (28) with no automatic gain control, the output of which goes to a window comparator (30). The output from the window comparator (31) goes to a digital high pass filter (32) and from there to an integrator 37 for providing a digital output signal (40) indicative of the presence or absence on the telephone line of a signal exceeding a predetermined magnitude within the filter pass band. The digital signal is then processed by an intelligent digital filter having a set of predetermined threshold values of durations for states of the digital output signal, by which determinations of pick-up are made. The digital filter is adaptive and learns the durations high and low states of the digital output signal as they occur, subsequently checking for deviations from previously learned valid values. The digital filter includes a digital phase lock loop which will lock into a periodic but asymmetric pattern in the digital output signal and declare pick-up when lock is lost.

6 Claims, 11 Drawing Figures



United States Patent [19]

Szlam et al.

[11] Patent Number: **4,477,698**

[45] Date of Patent: **Oct. 16, 1984**

[54] **APPARATUS FOR DETECTING PICK-UP AT A REMOTE TELEPHONE SET**

[75] Inventors: Aleksander Szlam, Marietta; Chester P. Quinn, Chamblee, both of Ga.

[73] Assignee: Melita Electronics Labs, Inc., Atlanta, Ga.

[21] Appl. No.: 415,711

[22] Filed: Sep. 7, 1982

[51] Int. Cl.³ H04M 1/26

[52] U.S. Cl. 179/90 BD

[58] Field of Search 179/5 R, 5 P, 6.02, 179/6.14, 90 BD; 375/120, 119

[56] **References Cited**

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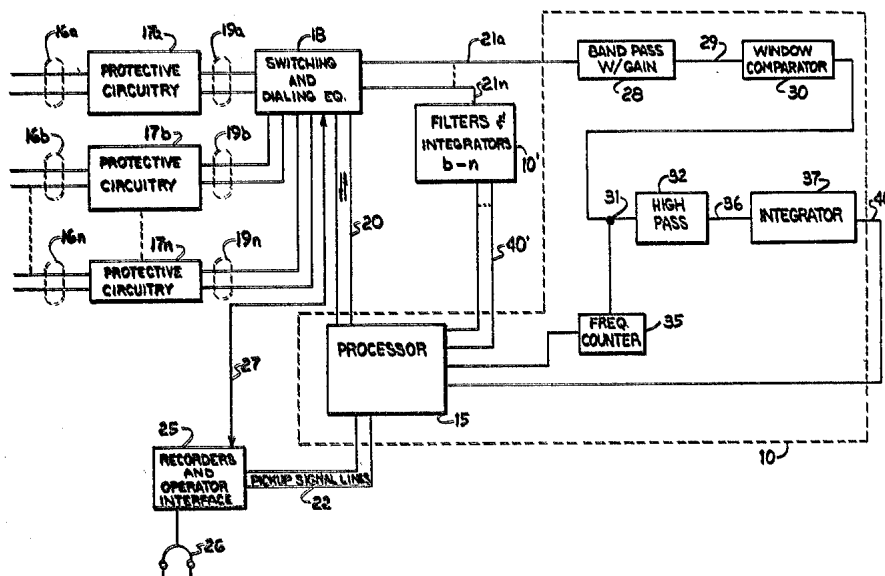
Clock Signal in Bit Stream", *Electronics*, vol. 52, No. 18, Aug. 30, 1979, pp. 126-130.

Primary Examiner—Keith E. George
Attorney, Agent, or Firm—Jones & Askew

[57] **ABSTRACT**

An improved combination of a hardware and digital signal processing filter for detecting pick-up of a telephone call, solely through audio information on the telephone line, is disclosed. The apparatus employs a high gain band pass filter (28) with no automatic gain control, the output of which goes to a window comparator (30). The output from the window comparator (31) goes to a digital high pass filter (32) and from there to an integrator 37 for providing a digital output signal (40) indicative of the presence or absence on the telephone line of a signal exceeding a predetermined magnitude within the filter pass band. The digital signal is then processed by an intelligent digital filter having a set of predetermined threshold values of durations for states of the digital output signal, by which determinations of pick-up are made. The digital filter is adaptive and learns the durations high and low states of the digital output signal as they occur, subsequently checking for deviations from previously learned valid values. The digital filter includes a digital phase lock loop which will lock onto a periodic but asymmetric pattern in the digital output signal and declare pick-up when lock is lost.

3 Claims, 11 Drawing Figures



- [54] **MULTIPLEXED LIQUID CRYSTAL DISPLAY**
- [75] Inventors: **Joseph H. Mehaffey, Atlanta; Aleksander Szlam, Marietta, both of Ga.**
- [73] Assignee: **Solid State Systems, Inc., Atlanta, Ga.**
- [21] Appl. No.: **248,230**
- [22] Filed: **Mar. 27, 1981**

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- 4,205,516 6/1980 Terao 340/756 X
- 4,236,153 11/1980 Aling 340/802 X
- 4,236,155 11/1980 Nagata 340/784

Primary Examiner—David L. Trafton
 Attorney, Agent, or Firm—Jones & Askew

[57] **ABSTRACT**

A multiplexed liquid crystal display arrangement including a back plane (241) driven by a signal (212) derived from a common clock signal (200). The clock signal on the back plane is also provided to one input of an EXCLUSIVE OR gate (245b) the other input of which is the incoming multiplexed data. A second clock signal (211) drives the multiplexing counter (141) which in turn drives the address lines (221) of an analog multiplexer (138). Each segment of a multi-segment liquid crystal display having the common back plane (241) has attached thereto a capacitor (C1 through C64) acting as a temporary storage for the signals. A spike suppression flip-flop (247) is used to disable the multiplexer during changes on the address lines in order to suppress output spikes which occur during such changes. The period of the spike suppression pulse is selected to be short with respect to the on period of each segment in the multiplex timing.

Related U.S. Application Data

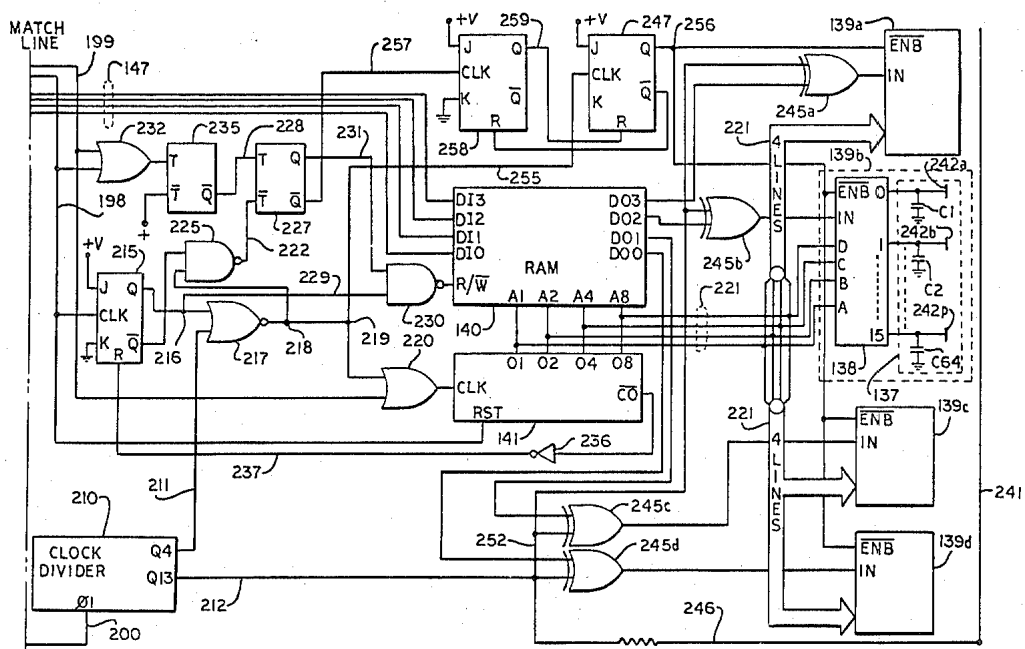
- [62] Division of Ser. No. 54,146, Jul. 2, 1979, Pat. No. 4,286,118.
- [51] Int. Cl.³ **G09G 3/18**
- [52] U.S. Cl. **340/765; 340/784; 340/798; 340/802**
- [58] Field of Search **340/765, 802; 350/332, 350/333**

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- 3,862,360 1/1975 Dill et al. 350/332 X

2 Claims, 3 Drawing Figures



- [54] **DATA DISTRIBUTION SYSTEM FOR PRIVATE AUTOMATIC BRANCH EXCHANGE**
- [75] Inventors: **Joseph H. Mehaffey, Atlanta; Aleksander Szlam, Marietta, both of Ga.**
- [73] Assignee: **Solid State Systems, Inc., Marietta, Ga.**
- [21] Appl. No.: **54,146**
- [22] Filed: **Jul. 2, 1979**
- [51] Int. Cl.³ **H04M 1/56; H04M 3/64; H04Q 3/56; H04Q 3/64**
- [52] U.S. Cl. **179/18 AD; 179/5.5; 179/18 AB; 179/18 J; 179/27 D; 179/27 FC**
- [58] Field of Search **179/18 AD, 18 FG, 18 AB, 179/27 FC, 99 LS, 99 M, 84 L, 18 J, 5.5, 7 R, 27 D; 370/92, 96**

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Primary Examiner—Thomas W. Brown
 Attorney, Agent, or Firm—Jones, Thomas & Askew

[57] **ABSTRACT**

A data distribution system for a private branch telephone exchange for providing information to a plurality of PBX stations. Two embodiments (serial and parallel) including addressable stations are shown. Memory devices driving a plurality of displays at each station are updated in response to command signals from a controller preceded by the station address. Each station may communicate with the controller and transmit keyed-in signals or information reflecting station availability. A novel multiplexed LCD, switching matrix bypass upon controller failure circuit, and bus protection circuit upon remote power supply failure are also shown.

7 Claims, 11 Drawing Figures

[56] **References Cited**

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