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**Goldman**

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(54) **CONVERTING AUTOMATIC NUMBER IDENTIFICATION INFORMATION TO CALLER ID INFORMATION**

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See application file for complete search history.

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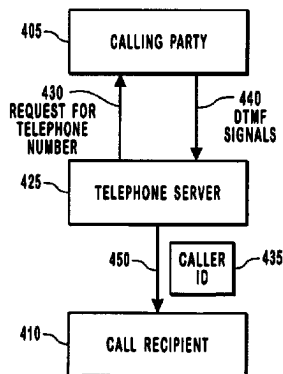
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(57) **ABSTRACT**

A telephone system for reliably providing caller identification information to telephone call recipients such that they can choose whether or not to answer a telephone call. The telephone system includes a decoder module for receiving a toll-free telephone call and decoding automatic number identification (ANI) information included within the toll-free telephone call. The system also includes a converter module for converting the decoded ANI information into caller ID information. The system also includes a forwarding module for making an outgoing telephone call to a toll-based telephone number of the call recipient and sending the audio data of the original toll-free telephone call and the caller ID information with the outgoing telephone call. In this manner, ANI information is used to generate caller ID information even if the calling party has blocked its caller ID information.

**5 Claims, 3 Drawing Sheets**



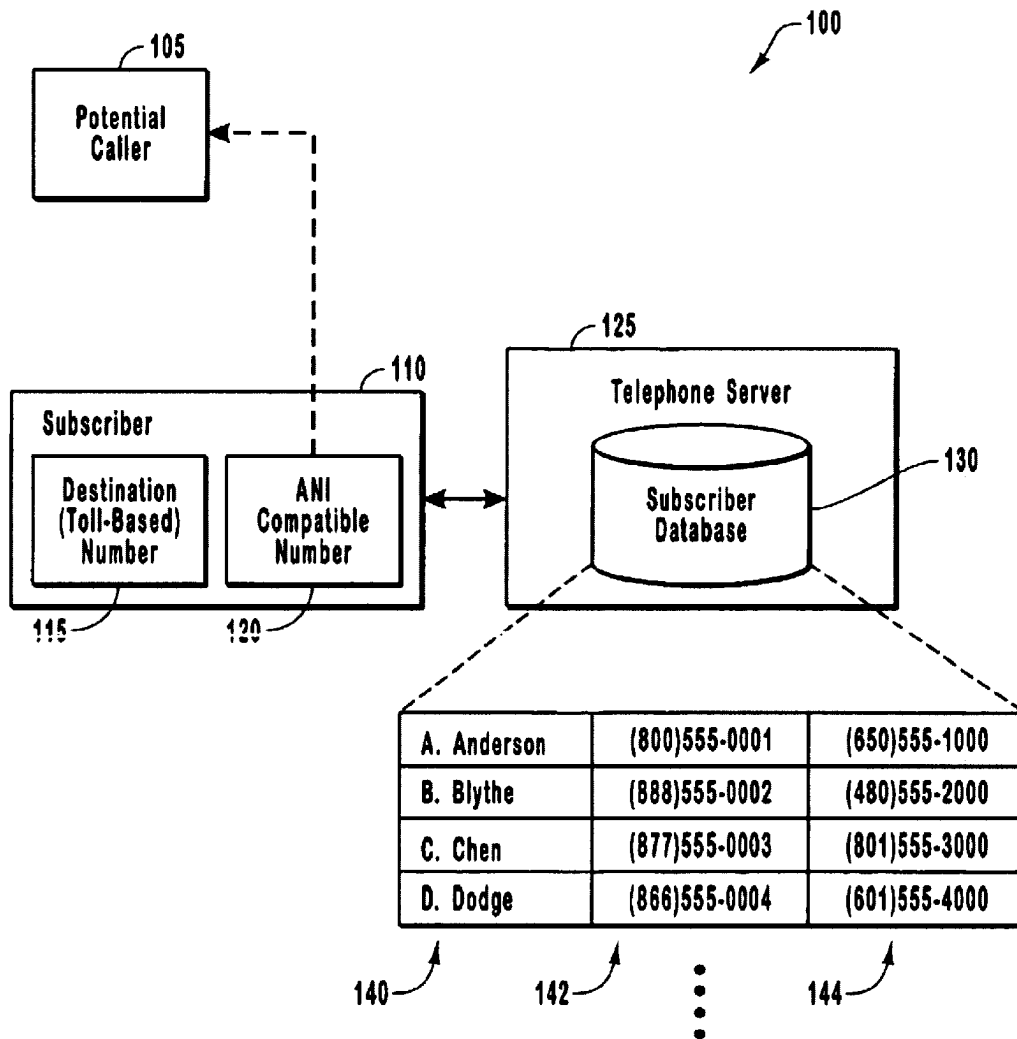


FIG. 1

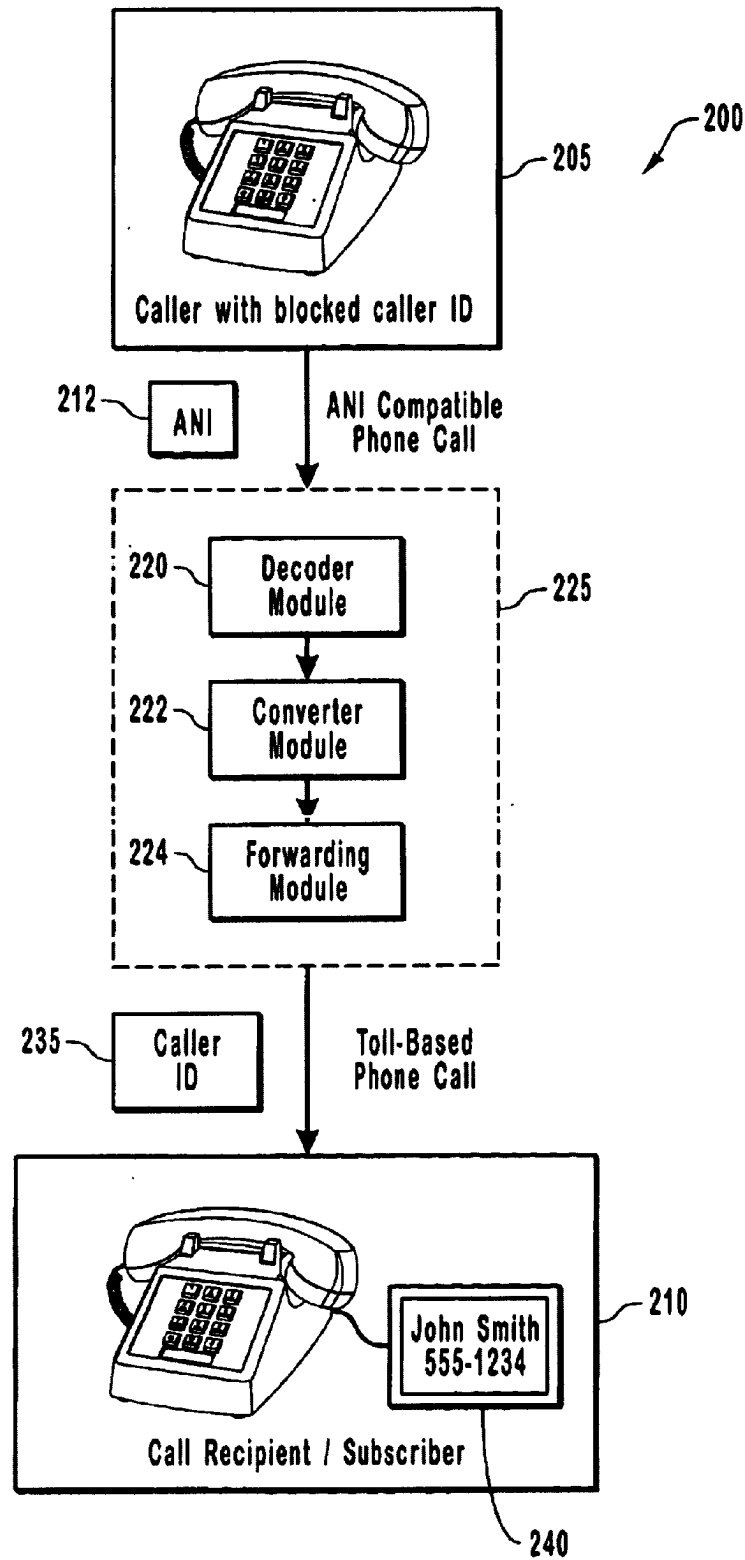


FIG. 2

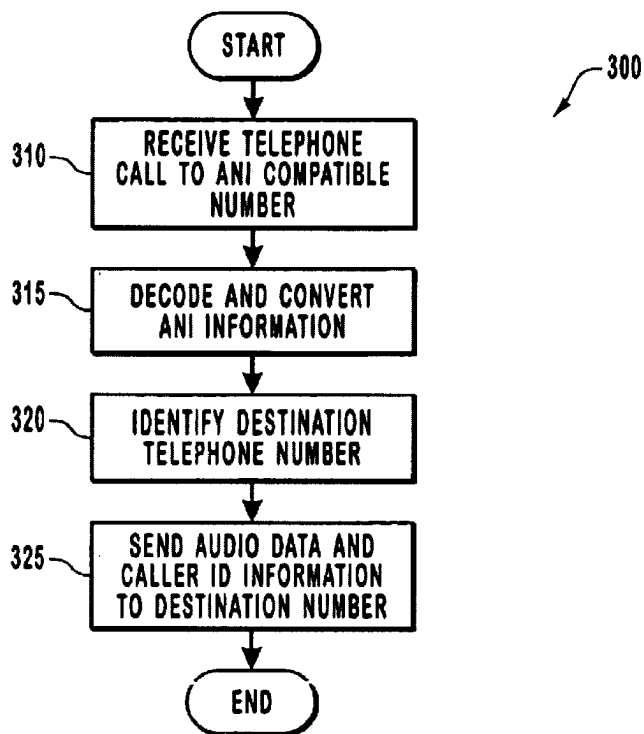


FIG. 3

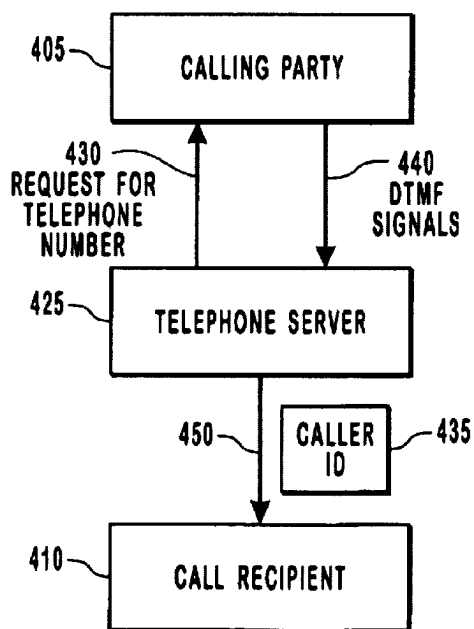


FIG. 4

1

## CONVERTING AUTOMATIC NUMBER IDENTIFICATION INFORMATION TO CALLER ID INFORMATION

### BACKGROUND OF THE INVENTION

#### 1. The Field of the Invention

This invention relates generally to the field of telecommunications. In particular, embodiments of the present invention relate to a system of converting automatic number identification (ANI) information into caller identification (caller ID) information.

#### 2. Background and Related Art

Telephone identification services are used to provide information about a calling party to a call recipient. Identification services arose out of a need for call recipients to have information about the caller before answering a telephone call. In a residential setting, this interest pertains to an individual's desire to avoid contact with salespeople and other undesired callers. Businesses typically use toll-free telephone numbers to allow clients to contact them at no cost to the clients. These toll-free telephone numbers charge the call recipient rather than the caller for the fees associated with a particular call. This creates an even stronger need for businesses that use a toll-free telephone number to avoid answering undesired calls by receiving information about the caller before accepting the call.

There are two common types of telephone identification services currently used in the United States. Caller ID is a residential identification service which provides the telephone number and name of the caller to the call recipient. Individuals must subscribe to a caller ID service plan and configure their telephones with devices that display the caller ID information. If a telephone number is designated as a subscriber to caller ID, the telephone company sends a data packet relating to the identification of the caller while the telephone is ringing. The data packet is generated by the telephone company who can identify the telephone number of a caller and the owner of that telephone number. The data packet is decoded by an external display device or an internal device within the telephone that displays the caller ID information. This service then allows the recipient to visually inspect the identification of the caller before deciding whether or not to answer the telephone.

Unfortunately, caller ID is not very effective in practice at providing the identification of callers that residential subscribers most likely wish to avoid. Telephone companies allow anyone to conceal their caller ID information for a small monthly fee. Most telemarketing companies realize that people do not wish to receive their calls and therefore conceal their caller ID information, in an effort to make it more likely that people will continue to accept their telephone solicitations. This practice of allowing any company or individual to conceal their caller ID information undermines the entire purpose of caller ID.

In addition, many regional telephone companies do not provide caller ID services for incoming telephone calls that originate from out of the companies' area of operation. Call recipients of such regional telephone companies are therefore unable to determine the identity of many callers. Moreover, caller ID operates as part of a cooperative system, and callers or telephone companies, with the appropriate equipment, can spoof a telephone number such that caller ID information can be altered or circumvented. In any of these

2

The second telephone information service is called automatic number identification (ANI). This service is designed to enable owners of toll-free telephone numbers or other numbers, such as premium service telephone numbers, to identify callers. A toll-free telephone number is a telephone number that charges the call recipient for all incoming calls rather than the caller. Currently, toll-free telephone numbers begin with one of several non-geographic area codes, which include 800, 866, 877 and 888. Premium service telephone numbers include those with a non-geographic area code of 900, many of which offer information or services for a fee paid by the caller based on the duration of the call.

Like caller ID, the ANI service attaches additional information to telephone calls to enable the call recipient to determine whether or not to accept the call. The ANI information may contain more than just the name and telephone number of the caller; it may contain certain billing information, such as a caller's current balance with the call recipient. Also like caller ID, the ANI information may be visually displayed on a computer or other device that is configured to decode the ANI information. Unlike caller ID, ANI information cannot easily be blocked by individuals or companies who wish to remain anonymous. Also unlike caller ID, telephone companies do not offer any form of blocking service which universally blocks ANI information from being transmitted. ANI provides a virtually guaranteed method of obtaining the identity of a caller before determining whether to answer a telephone call.

While ANI offers an alternative to caller ID, ANI is typically only offered on relatively expensive telephone lines, such as T-1 lines. Expensive private branch exchange (PBX) equipment that is generally impractical for residential use is required to decode ANI information. Thus, residential call recipients are typically limited to caller ID information rather than ANI to identify callers and, accordingly, often are unable to receive the caller ID information, particularly for telephone calls that are likely to be unwanted.

Therefore, there is a need for a system that provides the reliable caller identification information of ANI but is consistently available to residential users like caller ID. Such a system should be cost effective, user friendly and conforming to current FCC regulations.

### BRIEF SUMMARY OF THE INVENTION

These and other problems in the prior art are addressed by embodiments of the present invention, which relates to a system for reliably providing caller identification information to telephone call recipients such that they can choose whether or not to answer a telephone call. In addition, the system provides a call recipient with the ability to obtain identification information about a caller even if the caller has blocked his caller ID information or is out of area.

In one presently preferred embodiment, the system includes providing each call recipient who subscribes to the service with a toll-free telephone number in addition to the standard residential toll-based telephone number, of destination number, assigned to the call recipient. The toll-free telephone number is then used by the call recipient in all situations when a telephone number must be given out in a public setting.

Whenever a caller calls the toll-free telephone number, ANI information pertaining to the caller's telephone number is automatically included with the telephone call even if the caller has disabled his caller ID. The system receives the included ANI information and determines whether to

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