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(54) **SYSTEM FOR MODIFYING AND TARGETING ADVERTISING CONTENT OF INTERNET RADIO BROADCASTS**

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(71) Applicant: **WAG Acquisition, L.L.C.**, Flanders, NJ (US)

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(72) Inventors: **Harry E. Emerson**, Flanders, NJ (US);
William A. Grywalski, Budd Lake, NJ (US);
Gerald M. LeBow, Valhalla, NY (US)

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(73) Assignee: **WAG ACQUISITION L.L.C.**, Flanders, NJ (US)

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Primary Examiner — Catherine M Tarae

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(74) *Attorney, Agent, or Firm* — Ernest D. Buff & Associates, LLC; Ernest D. Buff

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G06Q 30/00 (2012.01)
G07G 1/14 (2006.01)

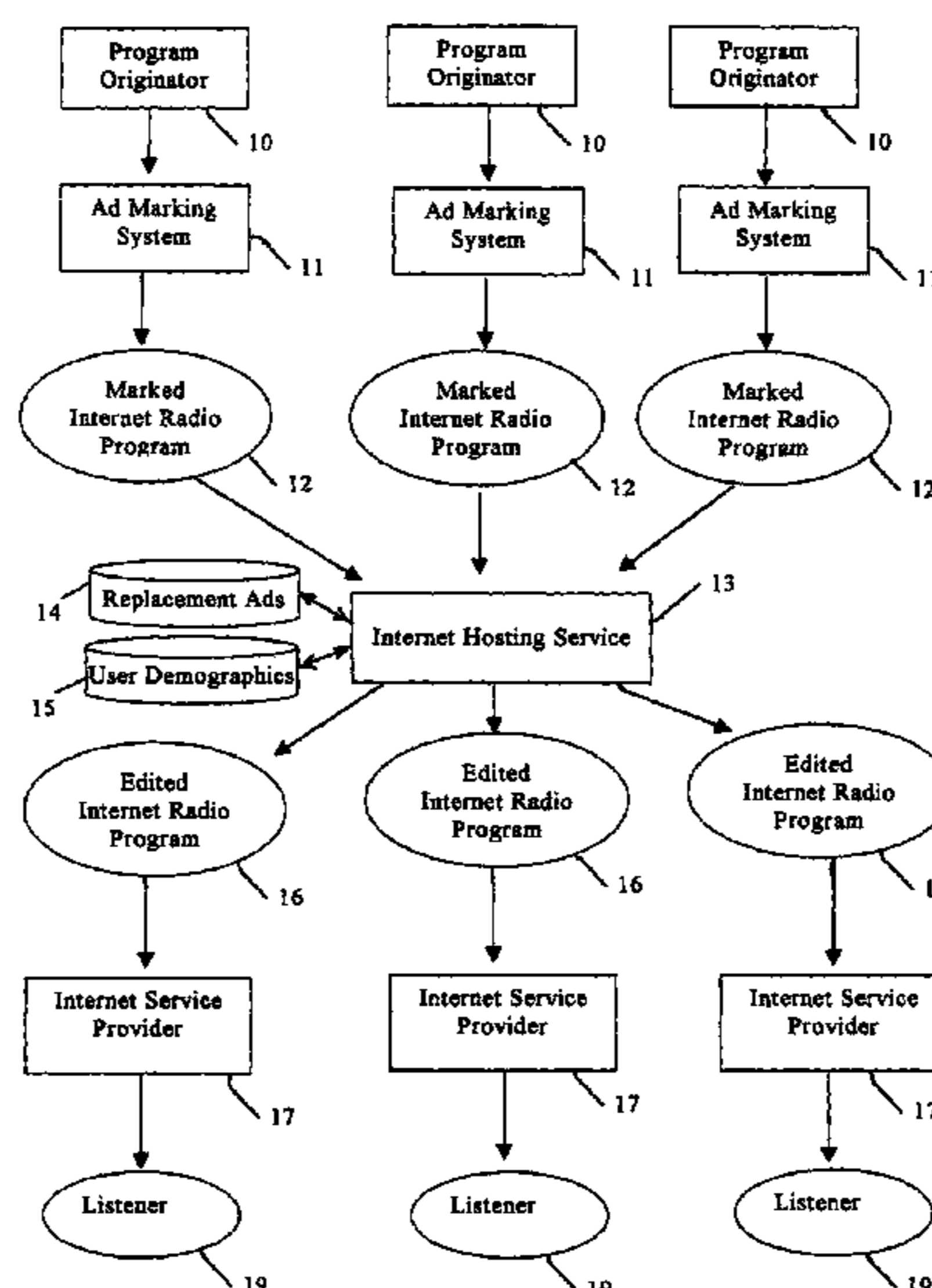
(52) **U.S. Cl.**
CPC **G06Q 30/00** (2013.01); **G07G 1/14** (2013.01)

(58) **Field of Classification Search**
CPC G06Q 30/00; G07G 1/14
See application file for complete search history.

(57) **ABSTRACT**

A radio station transmits its broadcast audio content, including audible advertisements, to listeners over the Internet via an Internet Hosting Service that provides listener access to radio station content. A computing system at the radio station digitizes the audio, and supplies marking information that identifies the beginning and duration of commercials. The digital marking information is supplied with the radio station's audio to the Internet Hosting Service. The Internet Hosting Service maintains a repository of replacement audio commercials along with information about the commercials including duration. Upon receiving the digital marker indicating the presence of a commercial, the Internet Hosting Service selects a replacement commercial of comparable duration from its repository. The Internet Hosting Service then substitutes the replacement commercial for the original broadcast commercial and produces an edited audio program for delivery to the listeners that carries advertising of higher value than the original advertising.

10 Claims, 3 Drawing Sheets



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Related U.S. Application Data

continuation of application No. 12/931,733, filed on Oct. 11, 2011, now Pat. No. Re. 44,477, which is an application for the reissue of Pat. No. 7,490,053.

(60) Provisional application No. 60/119,443, filed on Feb. 10, 1999.

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Figure 1

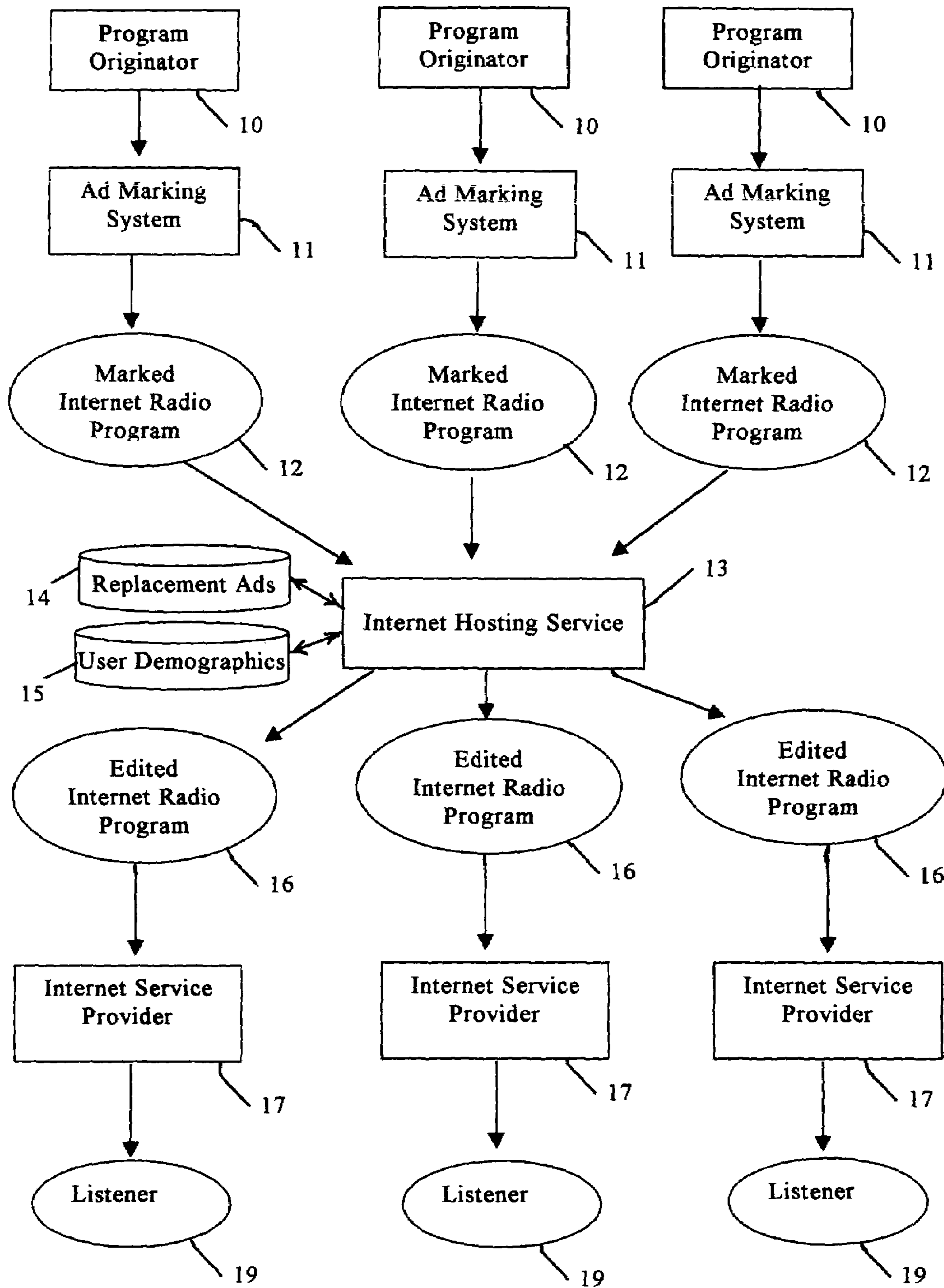


Fig. 2

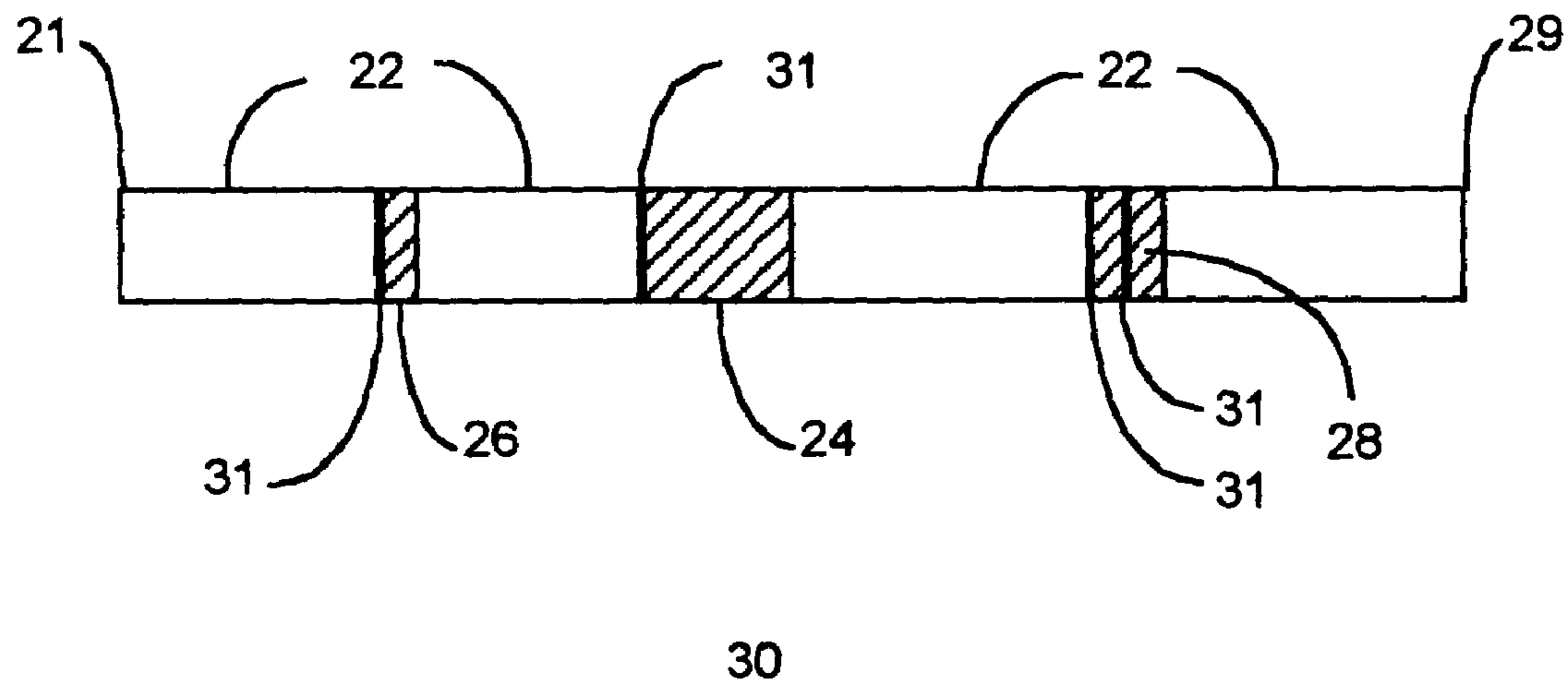
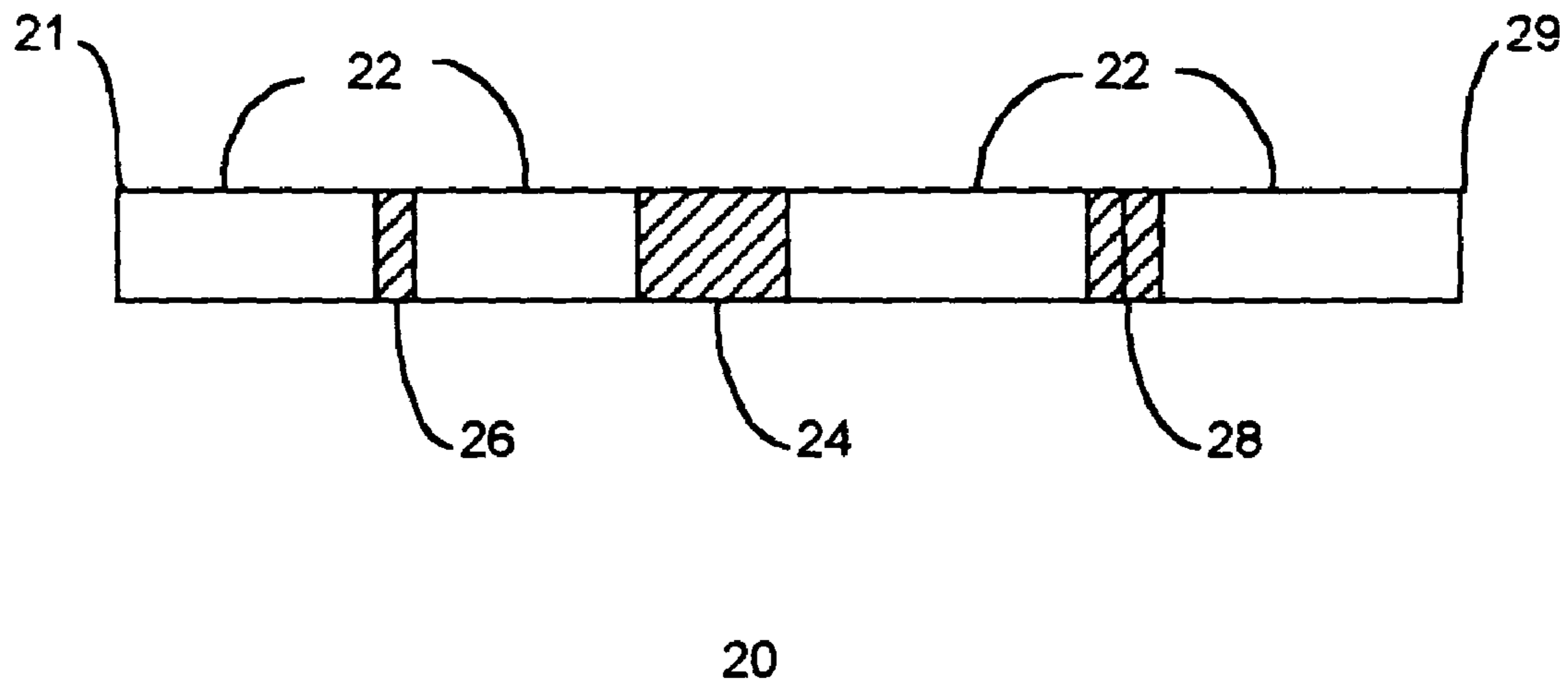
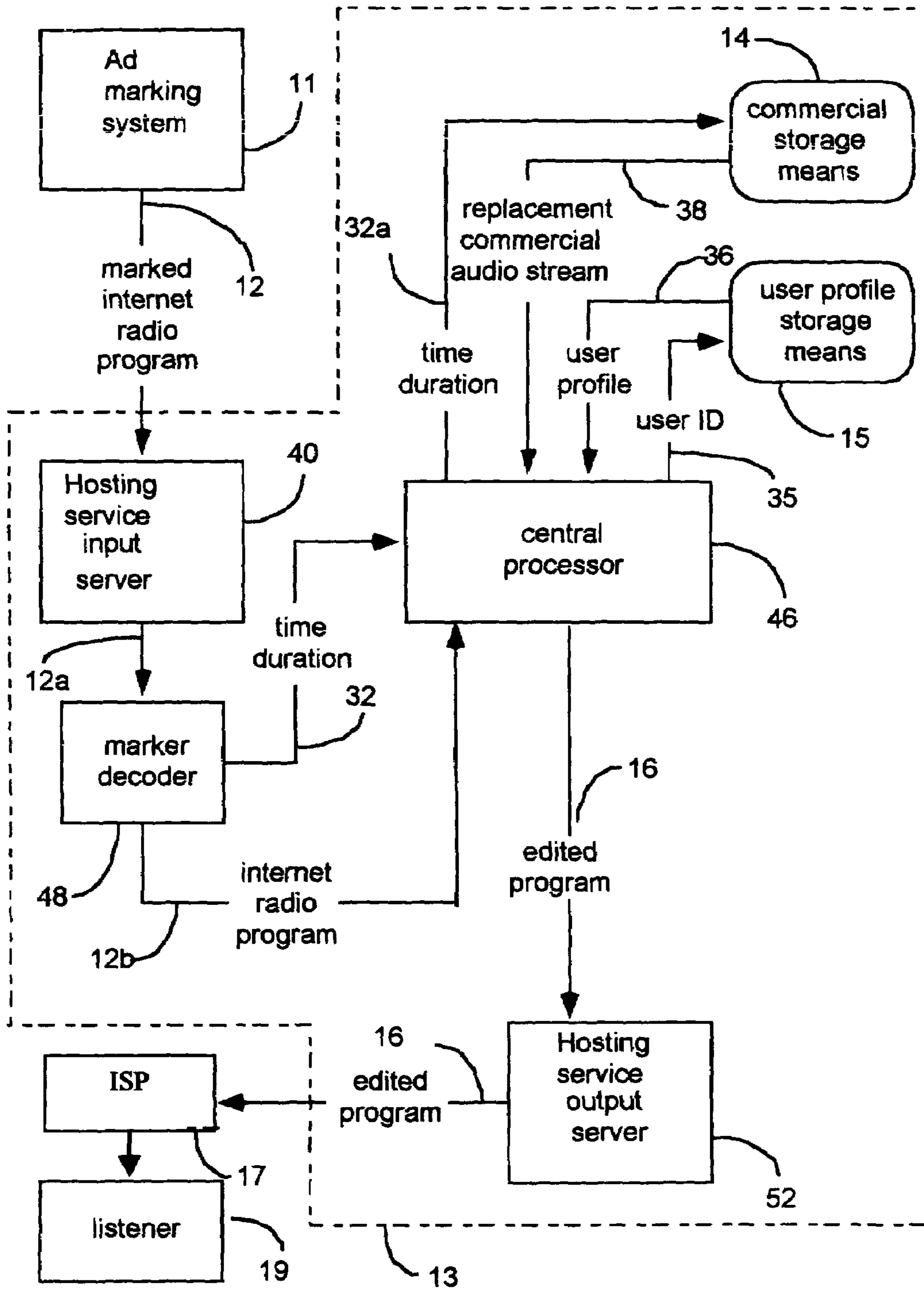


Fig. 3



**SYSTEM FOR MODIFYING AND
TARGETING ADVERTISING CONTENT OF
INTERNET RADIO BROADCASTS**

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue; a claim printed with strikethrough indicates that the claim was canceled, disclaimed, or held invalid by a prior post-patent action or proceeding.

CROSS REFERENCE TO RELATED
APPLICATIONS

[This application claims the benefit of U.S. Provisional Patent Application No. 60/119,443, filed Feb. 10, 1999 entitled "System For Modifying And Targeting Advertising Content of Internet Radio Broadcasts".] *This application is a continuation reissue of application Ser. No. 13/790,418, now U.S. Pat. No. RE46,917, filed Mar. 8, 2013, which is a continuation reissue of application Ser. No. 12/931,733, now U.S. Pat. No. RE44,477, filed Oct. 11, 2011, which is an application for reissue of U.S. Pat. No. 7,490,053, filed Jan. 5, 2000, which claims priority to U.S. Provisional Application No. 60/119,443, filed Feb. 10, 1999.*

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a method for substituting replacement commercial advertisements in place of original broadcast commercials for radio programs broadcast via the Internet.

2. Description of the Prior Art

Advertising is the primary mechanism by which producers of products and services capture the attention of potential consumers. In today's global marketplace of chaos and dislocation, the need for advertising has never been greater. Traditionally, mass advertising occurs by way of mass distribution through television, radio, newspapers and the like. Usually, advertisers prescribe the media content and pay for the mass distribution thereof. In some instances, the consumer subsumes a portion of the costs of the advertisements, as for example, by paying for a newspaper subscription. The advent of computer-driven technology, and especially the Internet, has rendered traditional advertising methods obsolete.

The Internet is a system of linked computers that provides for global information exchange and includes innumerable sites, each of which presents advertising, research and other information about a particular organization. Many organizations now rely on the Internet to obtain and transmit crucial and, oftentimes, sensitive information. Thus, the Internet has quickly become one of the most effective means by which an organization can globally advertise its goods and services.

It is now possible to listen to radio programs with a personal computer or other device capable of receiving audio data via the Internet. This is because it is becoming common for a regular broadcast radio station to make their programs available via the Internet. Internet radio programs originate from many different regions of the world. As a result, they are frequently sprinkled with commercial advertisements that are targeted to the region from which the program originated. A commercial for an automobile dealer in Lisbon is of little value to an Internet listener in Phila-

delphia. On the other hand, an Internet Hosting Service providing radio station content to the listener would benefit by substituting commercials of advertisers interested in reaching such listeners. The original commercials provide no benefit to the original radio station or advertisers, nor to the listener, nor are they a source of revenue for a business organization such as an Internet Hosting Service which presents radio stations on the Internet.

There remains a need in the art for an effective way to substitute replacement commercials for original broadcast commercials in radio programs transmitted via the Internet.

SUMMARY OF THE INVENTION

In accordance with the present invention, there is provided a method for substituting replacement commercial advertisements in place of original broadcast commercials for radio programs broadcast via the Internet. Generally stated, the method enables (a) generating a plurality of replacement radio commercials of various predetermined time lengths, whereby each replacement radio commercial has an associated time length; (b) digitizing the replacement radio commercials and the associated time lengths; (c) storing in an array the digitized replacement radio commercials and the associated time lengths, the array being stored by an Internet Hosting Service; (d) marking each of the broadcast radio commercials with a digital marker by the radio station, the digital marker indicating the start and duration time of the broadcast radio commercial within the Internet radio program; (e) transmitting the marked Internet radio program to the Internet Hosting Service; (f) receiving of the marked Internet radio program by the Internet Hosting Service; (g) detecting a digital marker of a commercial on the received Internet radio program; (h) reading the duration time of the received commercial from the detected digital marker; (i) comparing the read duration time with the associated time lengths stored in the array; (j) selecting from the array a digitized replacement radio commercial having an associated time length equal to the read duration time; (k) substituting the selected digitized replacement radio commercial in place of the broadcast commercial; and (l) repeating steps (g) through (k) until the end of the Internet radio program, whereby the listener of the Internet radio program receives an edited program having one or more replacement radio commercials substituted in place of the broadcast radio commercials.

Further, the invention provides a system for substituting broadcast commercials of an Internet radio program, with replacement commercials, comprising: (a) radio station means for marking the broadcast commercials of the Internet radio program with a mark, the mark indicating the start and time duration of the broadcast commercial; (b) input computer server means of an Internet Hosting Service for receiving the marked Internet radio program; (c) commercial storage means for storing a plurality of digitized replacement audio commercials; (d) central processor means for selecting one of the digitized replacement audio commercials from the commercial storage means; (e) marker decoder means for decoding the mark, the mark being supplied to the central processor; (f) digital audio processor means for generating an edited radio program by substituting the selected digitized replacement audio commercial in place of the broadcast commercial; and (g) output computer server means for transmitting the edited radio program to a user.

Optionally, the invention provides a system wherein the commercial storage means further stores commercial type

and a user profile storage means stores individual user ID and user demographics, whereby the central processor employs the user ID to match the user demographics to the commercial type for selecting a commercial targeted to the user.

Also optionally, as the audio content emanating from the radio station is digitized, it is placed into data packets each bearing a sequential serial number. The digitizing mark that is created to identify the presence of a commercial is embedded with the serial numbers of the audio packets constituting the beginning and the duration of the commercial. The Internet Hosting Service, upon receiving the audio stream from the radio station in serialized packet format, along with the marking information stream containing the serial numbers of the packets containing audio commercials, can precisely remove the audio broadcast commercial and substitute it with a replacement commercial with no audible artifacts suggesting to the listener that such replacement has taken place.

Conveniently, a large percentage of radio stations utilize a computer system rather than tapes or CD's for the origination of the majority of their audio content, including music and commercials. Such systems, referred to generally as "broadcast automation systems" or "live assist systems" actually play the audio for the music or the commercial. A broadcast automation system maintains a listing of all audio events that the station plans to broadcast, including critical information of each event such as event type and duration. It can signal the precise beginning and ending of each event, and can transmit the identifying data associated with each event to an external system such as an Internet Hosting Service. Broadcast automation systems, having the capabilities listed above, facilitate the implementation of advertising replacements as described herein.

Advantageously, the method of the present invention permits an Internet Hosting Service to substitute local advertisements in place of originally broadcast advertisements in radio programs broadcast via the Internet. The invention enables the Internet Hosting Service to generate additional revenues and to target advertisements to its customers. Customers are provided with increased opportunity to receive information concerning services or products more attuned to their needs.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be more fully understood and further advantages will become apparent when reference is made to the following detailed description and the accompanying drawings, in which:

FIG. 1 is a block diagram representing the modification of advertisements during the flow of an Internet radio program from the program originator to the listener;

FIG. 2 schematically depicts a radio program segment containing commercials and marker; and

FIG. 3 is a block diagram of a system for substituting local radio commercials in place of broadcast Internet radio commercials.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In accordance with the present invention, there is provided a method for substituting replacement commercial advertisements in place of original broadcast commercials for radio programs broadcast via the Internet. Internet radio programs originate from many different regions of the

world. As a result, they are frequently sprinkled with commercial advertisements that are targeted to the region from which the program originated. A commercial for an automobile dealer in Lisbon is of little value to an Internet listener in Philadelphia. On the other hand, an Internet Hosting Service providing Internet radio station access to the listener would benefit by substituting commercials of advertisers interested in reaching such listeners.

The invention provides a method for substituting replacement radio commercials in place of broadcast radio commercials by an Internet Hosting Service. In practice, each commercial is marked by the radio station with a digital marker that indicates the start and length of each commercial in the program broadcast. When the program is received by the Internet Hosting Service, each commercial is identified by its marker and a replacement commercial of the appropriate length is selected from a list of commercials kept by the Internet Hosting Service and substituted in place of the original commercial. The Internet Hosting Service may be any type of service which has the ability to receive communications from a radio station. That is to say, the Internet Hosting Service may be a private communications entity, a broadcasting network data center, a service provider or the like. In one embodiment, the Internet Hosting Service may comprise the same entity as an Internet service provider.

As illustrated by FIGS. 1 and 2 of the drawings, marked Internet radio programs **12** from a plurality of program originators **10** are sent to hosting service **13** via the Internet. The arrows in FIG. 1 indicate transfers, including Internet transfers. These Internet radio programs have broadcast radio commercials as part of their content. Ad marking systems **11**, which may be broadcast automation systems of the radio stations, introduce digital markings to accompany the audio content indicating the beginning and duration of audio ads in the audio stream. Further, ad marking systems **11** may digitize the radio station audio content into packets bearing sequential serial numbers, and the digital markings which indicate the beginning and end of audio ads may relate such beginnings and endings to audio packet serial numbers. Hosting service **13** receives the marked audio stream wherein the audio may be music interleaved with commercials, and the markings may be digital data packets indicating the beginning and ending of commercials within that audio stream. Hosting service **13** maintains a database of replacement audio ads **14** encompassing the ads and associated data describing each ad such as duration and the desired user demographics that the advertiser would like to reach. Hosting service **13** replaces audio ads emanating from the radio station program originator **10** with replacement ads of equivalent duration drawn from replacement ad database **14**, in the process creating an edited Internet radio program **16**. The resolution of the Ad Marking System **11** in digitizing the audio stream into serialized packets enables the creation of edited Internet radio programs **16** which are absent of audible artifacts to indicate that ad substitution has taken place. Edited Internet radio programs **16** are delivered to listeners **19** via the Internet Service Providers **17** which provide Internet access to the listeners **19**. Listeners **19** listen to the Internet radio stations from program originators **10**, hearing different ads from those who might contemporaneously listen to the radio station's over-the-air broadcast with a conventional radio. Optionally, the hosting service **13** may examine the desired user demographics associated with replacement ads **14** and match them against the user demographic database **15** comprised of demographic information about listeners **19**. If listeners **19** have differing demographics, the edited Internet radio programs **16** may be unique for

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each demographic type of listener **19** who may be listening to the same Internet radio station. That is, males listening to Internet radio station WXYZ may receive a different edited Internet radio program **16** from females listening to the same station.

The method for substituting replacement radio commercials in place of a plurality of broadcast radio commercials on an Internet radio program transmitted by a hosting service **13** to a listener **19** via an Internet service provider **17** comprises the steps of: (a) generating a plurality of replacement radio commercials of various predetermined time lengths, whereby each replacement radio commercial has an associated time length; (b) digitizing the replacement radio commercials and the associated time lengths; (c) storing in an array the digitized replacement radio commercials and the associated time lengths, the array being stored by the Internet Hosting Service **13**; (d) marking each of the broadcast radio commercials with a digital marker by the ad marking system **11**, the digital marker indicating the start and duration time of the broadcast radio commercial within the Internet radio program **12**; (e) transmitting the marked Internet radio program **12** to the Internet Hosting Service **13**; (f) receiving the marked Internet radio program **12** by the Internet Hosting Service **13**; (g) examining the marked Internet radio program **12** by the Internet Hosting Service **13**; (h) detecting a digital marker of a commercial on the marked Internet radio program **12**; (i) reading the duration time of the commercial from the detected digital marker; (j) comparing the read duration time with the associated time lengths stored in the array; (k) selecting from the array a digitized replacement radio commercial having an associated time length equal to the read duration time; (l) substituting the selected digitized replacement radio commercial in place of the commercial; and (m) repeating steps (h) through (l) until the end of the Internet radio program.

A segment of Internet radio program **20** starts at **21** and ends at **29**. Segment **20** is comprised of program elements **22** and commercials **24**, **26**, **28** of differing time durations. The hosting service **13** or the program originator **10** is provided with a means for marking the beginning of each commercial with marker **31**. Marker **31** comprises a start indicator and a time duration of commercials **24**, **26** and **28**. The marking means can take any number of methods known in the art, such as putting a digital pulse-modulated inaudible tone on a subcarrier of the audio wave. Alternatively, marking the start and time duration of the commercial is accomplished by adding a digital marker information packet to the audio data stream.

FIG. **3** illustrates the system used by Internet Hosting Service **13** for reading marked Internet radio program **12** received from program originator **10**. Internet Hosting Service **13** maintains commercial storage means **14**. Commercial storage means **14** comprises a database of digitized radio commercials of various predetermined time lengths along with each commercial's time length. Commercial storage means **14** is used to supply an appropriate duration commercial on demand. Preferably, Internet Hosting Service **13** also maintains user profile array **15**. This array comprises user ID and demographic information, whereby the demographic information may be used to target specific commercials to specific users.

Advantageously, the method of the present invention permits an Internet Hosting Service to substitute replacement advertisements in place of originally broadcast advertisements in radio programs broadcast via the Internet. The

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invention enables the Internet Hosting Service to generate additional revenues and to target advertisements to its customers.

In practice, radio station program originator **10** sends broadcast audio to ad marking system **11**, and then transmits marked Internet radio program **12** via the Internet to Internet Hosting Service input server **40** of Internet Hosting Service **13**. Marked Internet radio program is sent as data stream **12a** to marker decoder **48**. Marker decoder **48** reads marker **31** and decodes time duration **32**. Internet radio program data stream **12b** and time duration **32** are passed to central processor **46**. Central processor **46** uses time duration **32** to find an equal length substitute commercial from commercial storage means **14**. The selected commercial is returned to central processor **46** as replacement commercial audio stream **38**. Central processor **46** substitutes replacement commercial audio stream **38** for the original commercial resulting in edited program **16**. Edited program **16** is passed to Internet Hosting Service output server **52** and then sent via Internet through the Internet Service Provider **17** to the user, listener **19**.

Optionally, the system further comprises user profile storage means **15**, where demographics of each user are stored along with the user's ID number. User ID **35**, obtained from output server **52**, is also passed to central processor **46** and to user profile storage means **15**. In this manner, the system is provided with means for selecting a commercial targeted for a specific user or type of user.

The invention provides a system for substituting broadcast commercials of an Internet radio program, with replacement commercials, comprising: (a) radio station means for marking the broadcast commercials of the Internet radio program with a mark, the mark indicating the start and time duration of the broadcast commercial; (b) input server means for receiving the marked Internet radio program; (c) commercial storage means for storing a plurality of digitized radio commercials; (d) central processor means for selecting one of the digitized radio commercials from the commercial storage means; (e) marker decoder means for decoding the mark, the mark being supplied to the central processor; (f) central processor mixing means for generating an edited radio program by substituting the selected digitized radio commercial in place of the broadcast commercial; and (g) output server for transmitting the edited radio program to a user.

Optionally, the invention provides a system wherein the commercial storage means further stores commercial type and a user profile storage means stores individual user ID and user demographics, whereby the central processor employs the user ID to match the user demographics to the commercial type for selecting a commercial targeted for a specific user or type of user.

Having thus described the invention in rather full detail, it will be understood that such detail need not be strictly adhered to but that various changes and modifications may suggest themselves to one skilled in the art, all falling within the scope of the present invention as defined by subjoined claims.

What is claimed is:

[1. An interactive method for substituting replacement radio commercials in place of a plurality of broadcast radio commercial streams on an Internet radio program broadcast by a radio station to an Internet hosting service based on user preferences indicating demographic, and personal preferences, comprising the steps of:

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- (a) generating a plurality of replacement radio commercial streams of various predetermined time lengths, whereby each replacement radio commercial has an associated time length;
- (b) digitizing said replacement radio commercial streams and said associated time lengths;
- (c) storing in an array said digitized replacement radio commercial streams and said associated time lengths, said array stored at an Internet service provider;
- (d) maintaining user demographic information and user preferences;
- (e) marking each of said broadcast radio commercial streams with a digital marker by said radio station, said digital marker indicating the start and duration time of said broadcast radio commercial within said Internet radio program;
- (f) transmitting said marked Internet radio program stream to said Internet hosting service;
- (g) receiving of said marked Internet radio program stream by said Internet hosting service;
- (h) examining of said marked Internet radio program stream by said Internet hosting service;
- (i) detecting a digital marker of a commercial on said received Internet broadcast program stream;
- (j) reading the duration time, of said commercial, from said detected digital marker;
- (k) comparing said read duration time with said associated time lengths stored in said array;
- (l) selecting from said array a digitized replacement radio commercial having an associated time length equal to said read duration time to match said demographic information and said user preferences with said replacement commercial stream having an associated time length equal to said real duration time;
- (m) substituting said selected digitized replacement radio commercial stream in place of said broadcast commercial stream; and
- (n) repeating steps (h) through (l) until the end of said Internet radio program, whereby the listener of said Internet radio program stream receives an edited program stream having one or more replacement radio commercial streams substituted in place of said broadcast radio commercial.】

【2. A method as recited in claim 1 wherein said marking of broadcast radio commercial streams is performed by a radio station computer system, such as a broadcast automation system.】

【3. A method as recited in claim 2 wherein the audio stream of the radio station is digitized into packets bearing sequential serial numbers, and said marking of broadcast commercial streams by marking the start time and duration of the commercial identifies the audio packet serial numbers constituting the beginning and duration of the audio commercial to be replaced.】

【4. A method as recited in claim 1 wherein the Internet hosting service maintains commercial type information for targeting ads to consumers, and user demographic information, and matches said user demographics and personal preferences to said commercial type for selecting a commercial targeted to said user.】

【5. An interactive system for substituting broadcast commercial streams of an Internet radio program stream, with replacement commercial streams, comprising:

- (a) radio station means for marking said broadcast commercial streams of said Internet radio program with a mark, said mark indicating the start and time duration of said broadcast commercial stream;

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- (b) input server means for receiving said marked Internet radio program stream by an Internet hosting service;
- (c) commercial storage means of said Internet hosting service for storing a plurality of digitized radio commercial streams and user preferences;
- (d) central processor means for selecting one of said digitized radio commercials from said commercial storage means matching said user preferences;
- (e) marker decoder means for decoding said mark, said mark being supplied to said central processor;
- (f) comparison means to select a digitalized radio commercial stream in place of said broadcast commercial stream;
- (g) central processor mixing means for generating an edited radio program stream by substituting said selected digitized radio commercial streams in place of said broadcast commercial stream; and
- (h) output server means for transmitting said edited radio program stream to a user.】

【6. A system as recited by claim 5 wherein said commercial storage means further stores commercial type.】

【7. A system as recited by claim 5 further comprising user profile storage means for storing individual user ID and user demographics, whereby said central processor employs said user ID to match said user demographics and said user preferences to said commercial type for selecting a commercial targeted to said user.】

8. *A system for modifying and targeting advertising content of an Internet radio broadcast, comprising:*

- an originating subsystem comprising,*
 - an audio source emitting an audio track for a radio program, the audio track containing audio ads;*
 - a processor-controlled subsystem, emitting data comprising the start time and duration of each of the audio ads;*
 - an ad marking system, comprising a processor, adapted to receive the audio track;*
 - receive the data comprising the start time and duration of each of the audio advertisements;*
 - generate a marked digitized stream comprising audio data from the audio track and at least one digital marker embedded in the digitized stream, indicating the beginning of an original audio ad contained within the audio track and either or both of the duration and end of the original ad; and*
 - send the marked stream to a streaming server via the Internet;*
 - a streaming server subsystem adapted to receive and process the stream, comprising a processor adapted to receive the marked stream from the ad marking system via the Internet;*
 - receive a request from a user for a stream;*
 - retrieve demographic data for an identity associated with the request from previously stored information;*
 - read the at least one digital marker from the marked stream and determine therefrom the start and duration of an original audio ad in the marked stream;*
 - retrieve from a repository of audio ads categorized by type and duration a replacement audio ad of a duration equivalent to the determined duration and of a type matching the retrieved demographic data;*
 - insert the replacement ad in an output stream in place of the original ad; and*
 - send the output stream to the requesting user;*
- said system functioning such that each of a plurality of individual users listening to the Internet radio broadcast transmitted by said system receives a program stream con-*

taining demographically targeted audio advertising content according to demographic data of that individual user.

9. The system of claim 8,

wherein the processor of the ad marking system is further adapted to generate the stream such that it is comprised of sequentially numbered packets and such that the at least one digital marker contains packet number information indicating the beginning of the original audio ad and either or both of the duration and end of the original ad;

further wherein the processor of the streaming server subsystem is further adapted to use the packet number information of the at least one digital marker to replace the original ad with the replacement ad.

10. A streaming server system for distributing demographically targeted advertising to a plurality of users listening to a radio program over the Internet, comprising a processor adapted to

receive a marked digitized stream via the Internet from a radio program originator, comprising an audio track for a radio program containing original audio ads and containing at least one digital marker embedded in the digitized stream indicating the beginning of an original audio ad contained within the audio track and either or both of the duration and end of the original ad;

receive a request from a user for a stream;

retrieve demographic data from previously stored information for an identity associated with the request;

determine from the at least one digital marker the start and duration of the original ad;

retrieve from a repository of audio ads categorized by type and duration a replacement audio ad of a duration equivalent to the determined duration and of a type matching the retrieved demographic data;

insert the replacement ad in place of the original ad in the stream; and

send the stream to the requesting user;

said streaming server functioning such that each of a plurality of individual users listening to the Internet radio broadcast transmitted by said streaming server receives a program stream containing demographically targeted audio advertising content according to demographic data of that individual user.

11. The streaming server system of claim 10, wherein the stream received from the radio program originator comprises sequentially numbered packets such that the at least one digital marker contains packet number information indicating the beginning of the original audio ad and either or both of the duration and end of the original ad, and further wherein the processor is further adapted to use the packet number information of the at least one digital marker to replace the original ad with the replacement ad.

12. A method for modifying and demographically targeting advertising content of an Internet radio broadcast, comprising:

by an audio source, emitting an audio track for a radio program, the audio track containing audio ads;

by a processor-controlled subsystem, emitting data comprising the start time and duration of each of the audio ads;

by an ad marking system comprising a processor, receiving the audio track;

receiving the data comprising the start time and duration of each of the audio ads;

generating a marked digitized stream comprising audio data from the audio track and at least one digital marker embedded in the digitized stream indicating

the beginning of an original audio ad contained within the audio track and either or both of the duration and end of the original ad; and sending the marked stream to a streaming server via the Internet;

by a streaming server,

receiving the marked stream from the ad marking system via the Internet;

receiving a request from a user for a stream;

retrieving demographic data for an identity associated with the request from previously stored information; reading the at least one digital marker from the stream and determining therefrom the start and duration of the original ad;

retrieving from a repository of audio ads categorized by type and duration a replacement audio ad of a duration equivalent to the determined duration and of a type matching the retrieved demographic data; inserting the replacement ad in place of the original ad in the stream; and

sending the stream to the requesting user;

wherein each of a plurality of individual users listening to the Internet radio broadcast receives a program stream containing demographically targeted audio advertising content according to demographic data of that individual user.

13. The method of claim 12,

wherein the steps performed with the processor of the ad marking system further comprise generating the stream such that it is comprised of sequentially numbered packets and such that the at least one digital marker contains packet number information indicating the beginning of the original audio ad and either or both of the duration and end of the original ad; and

wherein the steps performed with the processor of the streaming server subsystem further comprise using the packet number information of the at least one digital marker to replace the original ad with the replacement ad.

14. A method performed with a processor for distributing a radio program stream containing original audio ads to a plurality of users listening to a radio program over the Internet, comprising:

receiving the radio program from a radio program originator via the Internet in the form of a marked digitized stream comprising an audio track and at least one digital marker embedded in the digitized stream indicating the beginning of an original audio ad contained within the audio track and either or both of the duration and end of the original ad;

receiving a request from a user for a stream;

retrieving demographic data for an identity associated with the request from previously stored information; determining from the at least one digital marker the start and duration of the original ad;

retrieving from a repository of audio ads categorized by type and duration a replacement ad of a duration equivalent to the determined duration and of a type matching the retrieved demographic data; inserting the replacement ad in place of the original ad in the stream; and

sending the stream to the requesting user;

wherein each of a plurality of individual users listening to the Internet radio broadcast receives a program stream containing demographically targeted audio advertising content according to demographic data of that individual user.

15. The method of claim 14, wherein the stream received from the radio program originator comprises sequentially

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numbered packets such that the at least one digital marker contains packet number information indicating the beginning of the original ad and either or both of the duration and end of the original ad, said method further comprising using the packet number information of the at least one digital marker to replace the original ad with the replacement ad.

16. An article of manufacture for adapting a streaming media server for serving a radio program stream to a plurality of users listening to the program over the Internet, comprising a non-transitory machine-readable medium on which there has been recorded instructions comprising:

routines for receiving a marked digitized stream from a radio program originator via the Internet comprising an audio track for a radio program and at least one digital marker embedded in the digitized stream indicating the beginning of an original audio ad in the audio track and either or both of the duration and end of the original ad;

routines for receiving from a user a request for a stream; routines for retrieving demographic data for an identity associated with the request from previously stored information;

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routines for determining from the at least one digital marker the start and duration of the original ad; routines for retrieving from a repository of audio ads categorized by type and duration a replacement ad of a duration equivalent to the determined duration and of a type matching the retrieved demographic data; routines for inserting the replacement ad in place of the original ad in the stream; and

routines for sending the stream to the requesting user; said routines operating with the effect that each of a plurality of individual users listening to the Internet radio broadcast receives a program stream containing demographically targeted audio advertising content according to demographic data of that individual user.

17. The article of claim 16, wherein the received marked digitized stream comprises sequentially numbered packets and the routine for determining from the at least one digital marker the start and duration of the original ad performs the further function of determining packet number information indicating said start and duration.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : RE48,109 E
APPLICATION NO. : 16/015574
DATED : July 21, 2020
INVENTOR(S) : Emerson et al.

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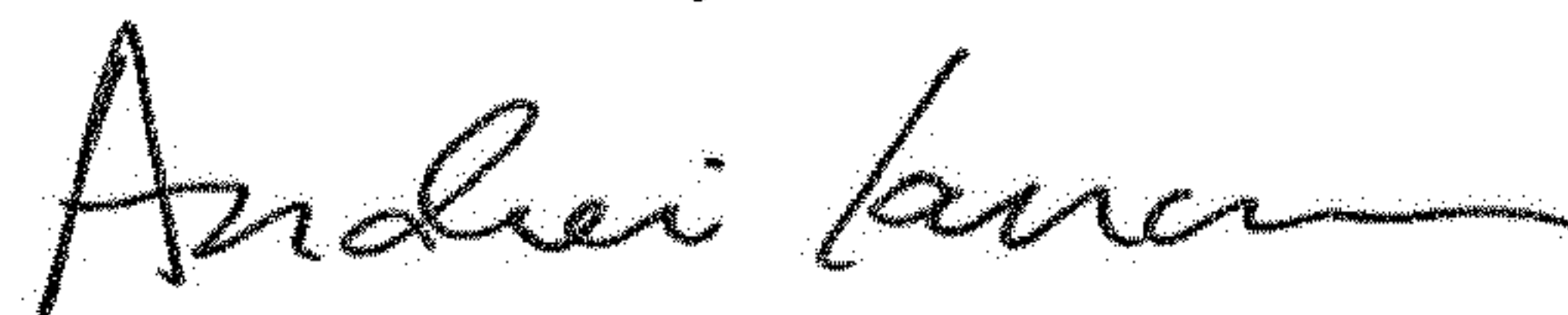
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Specification

At Column 1, under the heading "CROSS REFERENCE TO RELATED APPLICATIONS," replace Lines 16-26 (approx.), with the following:

--NOTICE: More than one reissue application has been filed for the reissue of U.S. Patent No. 7,490,053 B1. The reissue applications are U.S. Reissue Patent Application Serial No. 16/015,574 (the present application), filed on June 22, 2018, now U.S. Reissue Patent No. RE48,109 E, issued July 21, 2020, which is a continuation reissue application of U.S. Reissue Patent Application Serial No. 13/790,418, filed on March 8, 2013, now U.S. Reissue Patent No. RE46,917 E, issued June 26, 2018, which together with U.S. Reissue Patent Application Serial Nos. 13/790,565 and 13/790,663, each filed on March 8, 2013, each now abandoned, are each ('418, '565, and '663) a continuation reissue application of U.S. Reissue Patent Application Serial No. 12/931,733, filed on October 11, 2011, now U.S. Reissue Patent No. RE44,477 E, issued September 3, 2013, which is a reissue application of U.S. Patent Application Serial No. 09/477,936, filed on January 5, 2000, now U.S. Patent No. 7,490,053 B1, issued February 10, 2009, which claims the benefit of priority to U.S. Provisional Patent Application No. 60/119,443, filed on February 10, 1999, now expired.--

Signed and Sealed this
Twentieth Day of October, 2020



Andrei Iancu
Director of the United States Patent and Trademark Office