US00RE42053E

(19) **United States**
(12) **Reissued Patent**
Imanaka

(10) **Patent Number: US RE42,053 E**
(45) **Date of Reissued Patent: Jan. 18, 2011**

(54) **SERVER APPARATUS, SUBSCRIBER APPARATUS AND INFORMATION ON DEMAND SYSTEM**

(75) Inventor: **Ryoichi Imanaka**, Hirakata (JP)

(73) Assignee: **Panasonic Corporation**, Osaka (JP)

(21) Appl. No.: **09/594,152**

(22) Filed: **Jun. 12, 2000**

Related U.S. Patent Documents

Reissue of:
(64) Patent No.: **5,790,172**
Issued: **Aug. 4, 1998**
Appl. No.: **08/503,604**
Filed: **Jul. 18, 1995**

(30) **Foreign Application Priority Data**

Jul. 19, 1994 (JP) 6-166695

(51) **Int. Cl.**
H04N 7/16 (2006.01)
H04N 7/173 (2006.01)
H04N 5/91 (2006.01)

(52) **U.S. Cl.** **725/8**; 725/88; 725/91; 725/100; 386/83

(58) **Field of Classification Search** 725/1–8, 725/86, 87, 91, 92, 93, 100, 133; 386/94, 386/83; 360/60; 380/201, 202; 705/58, 57; *H04N 7/16, 7/173*
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,679,813	A		7/1972	Banning, Jr.
4,528,589	A		7/1985	Block et al.
4,667,802	A	*	5/1987	Verduin et al. 194/217
4,945,563	A	*	7/1990	Horton et al. 380/203
5,003,384	A	*	3/1991	Durden et al. 725/104
5,195,092	A		3/1993	Wilson et al.
5,446,490	A		8/1995	Blahut et al.
5,491,820	A		2/1996	Belove et al.
5,497,240	A	*	3/1996	Yoo 386/46
5,504,933	A		4/1996	Saito
5,592,551	A	*	1/1997	Lett et al. 380/211
5,619,247	A	*	4/1997	Russo 348/3
5,640,453	A	*	6/1997	Schuchman et al. 380/10
5,901,339	A	*	5/1999	Saito 725/5
6,002,694	A	*	12/1999	Yoshizawa et al. 370/486

FOREIGN PATENT DOCUMENTS

JP	62-151049	7/1987
JP	63-239653	10/1988
JP	2-108280	4/1990

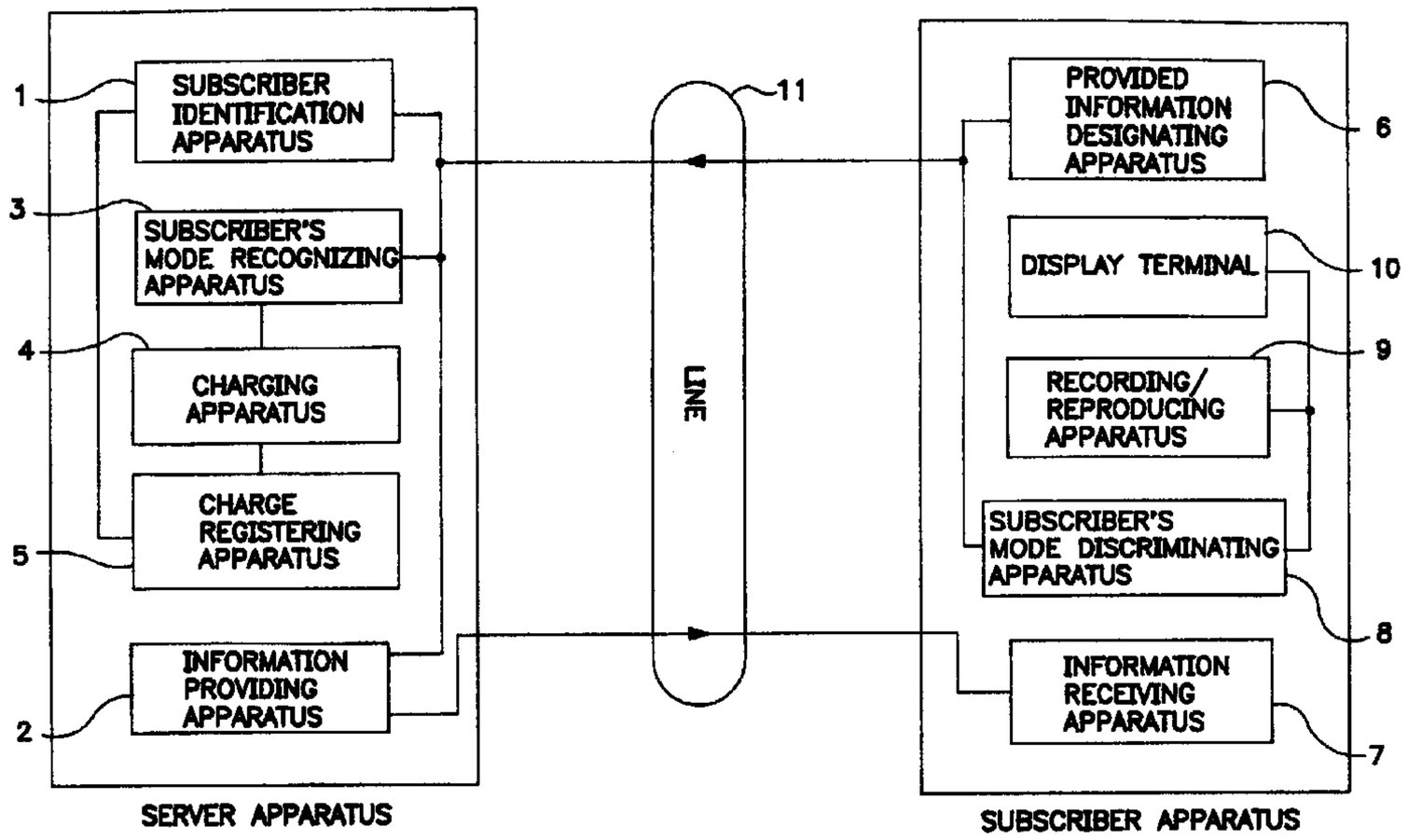
* cited by examiner

Primary Examiner—Dominic D Saltarelli
Assistant Examiner—Chris Parry
(74) *Attorney, Agent, or Firm*—RatnerPrestia

(57) **ABSTRACT**

An information on demand system provides a user of a terminal (subscriber) information through a network such as CATV such that the user pays an adequate charge to a server (information provider). According to the information on demand system, the received information can be recorded in a recording medium under control of the terminal equipment. Cases in which 1) the subscriber merely watches a program on a television receiver and; 2) the subscriber records the program and watches it by reproducing the recorded information at another time are distinguished and the subscriber is charged a different amount by the server accordingly.

6 Claims, 5 Drawing Sheets



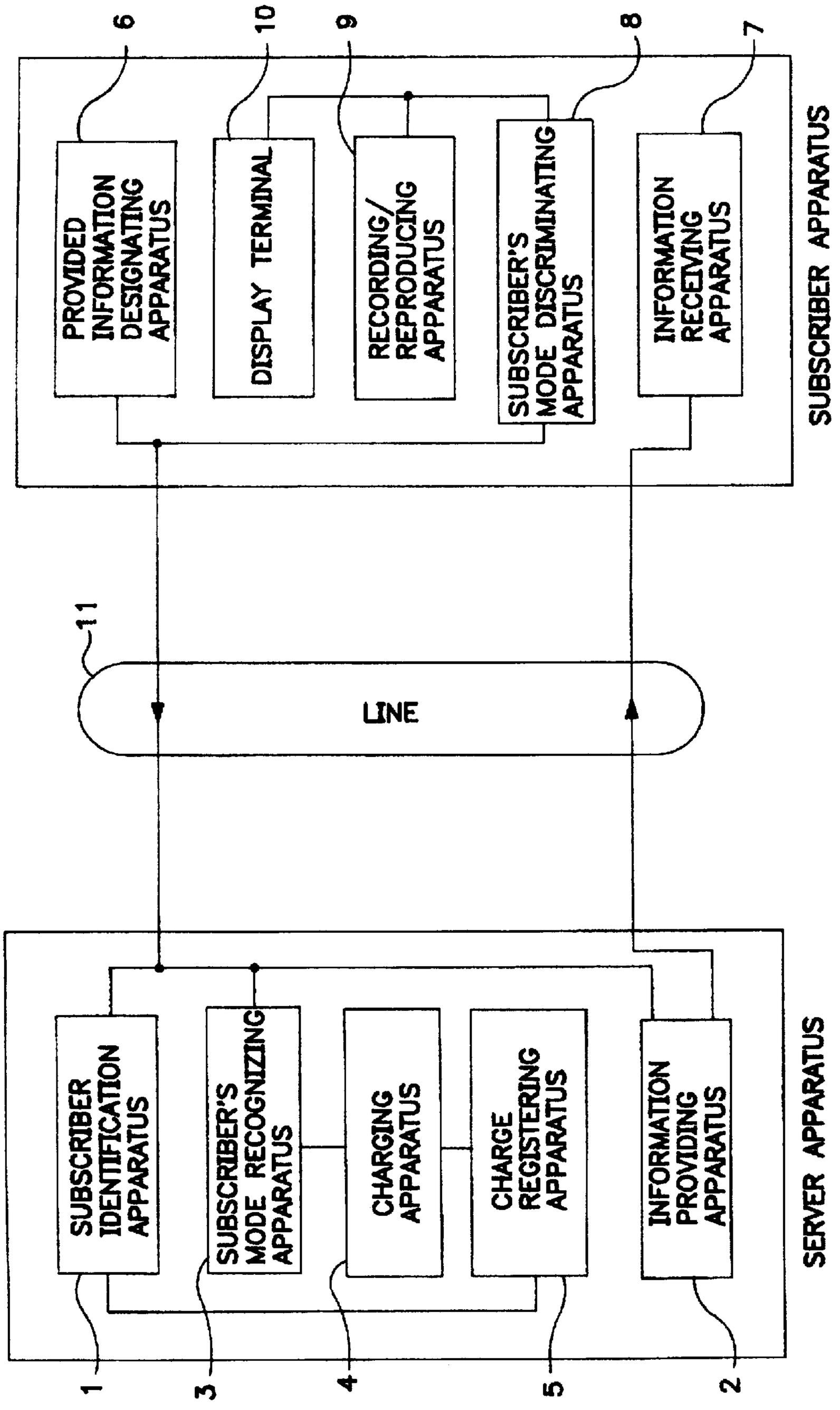

SERVER APPARATUS
SUBSCRIBER IDENTIFICATION APPARATUS
SUBSCRIBER'S MODE RECOGNIZING APPARATUS
CHARGING APPARATUS
CHARGE REGISTERING APPARATUS
INFORMATION PROVIDING APPARATUS
1
3
4
5
2
LINE
11
SUBSCRIBER APPARATUS
PROVIDED INFORMATION DESIGNATING APPARATUS
DISPLAY TERMINAL
RECORDING/ REPRODUCING APPARATUS
SUBSCRIBER'S MODE DISCRIMINATING APPARATUS
INFORMATION RECEIVING APPARATUS
6
10
9
8
7

FIG. 1

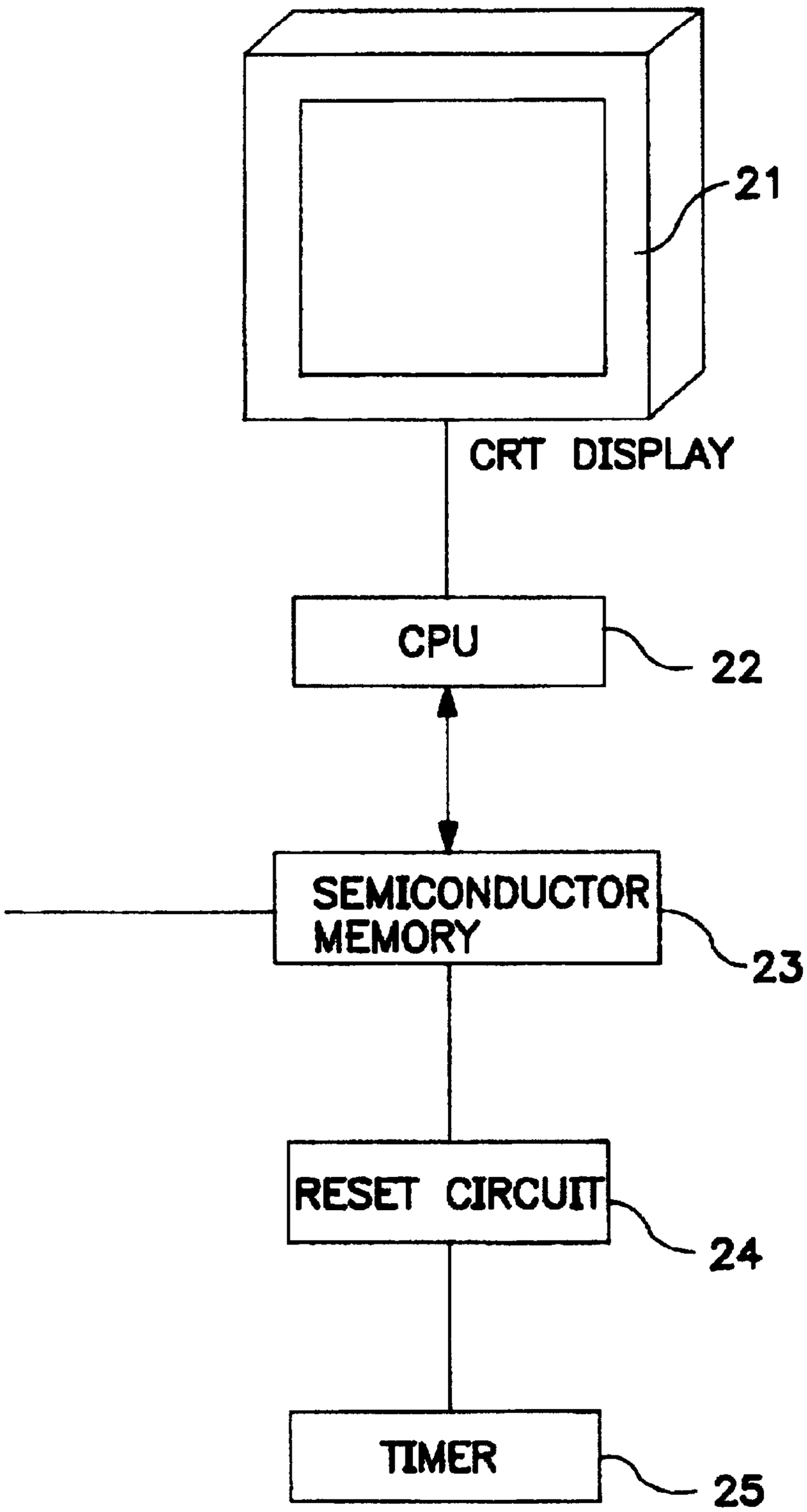

21
CRT DISPLAY
CPU
22
SEMICONDUCTOR MEMORY
23
RESET CIRCUIT
24
TIMER
25

FIG. 2

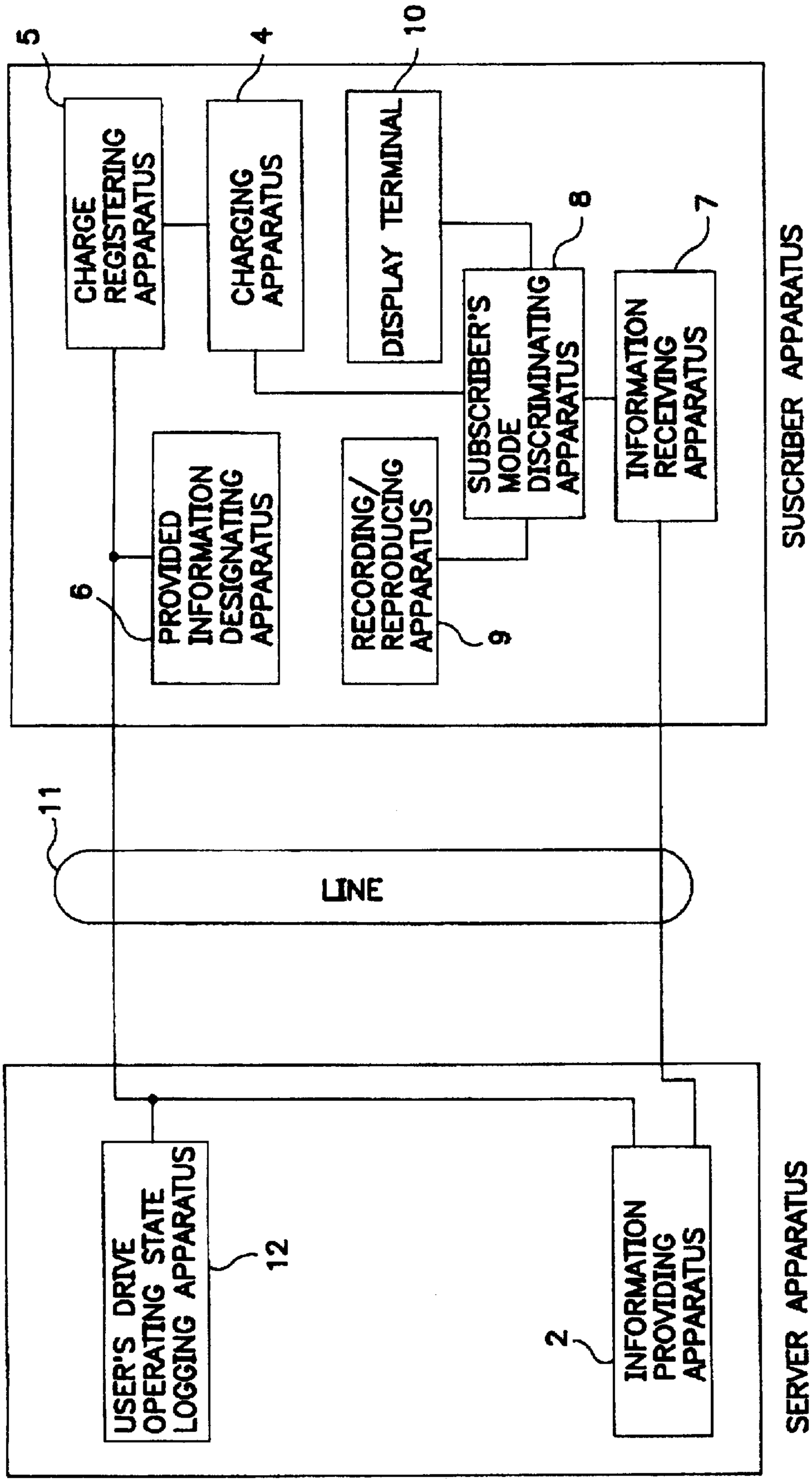

SERVER APPARATUS
USER'S DRIVE OPERATING STATE LOGGING APPARATUS
12
INFORMATION PROVIDING APPARATUS
2
LINE
11
SUSCRIBER APPARATUS
PROVIDED INFORMATION DESIGNATING APPARATUS
6
RECORDING/ REPRODUCING APPARATUS
9
SUBSCRIBER'S MODE DISCRIMINATING APPARATUS
8
INFORMATION RECEIVING APPARATUS
7
DISPLAY TERMINAL
10
CHARGING APPARATUS
4
CHARGE REGISTERING APPARATUS
5

FIG. 3

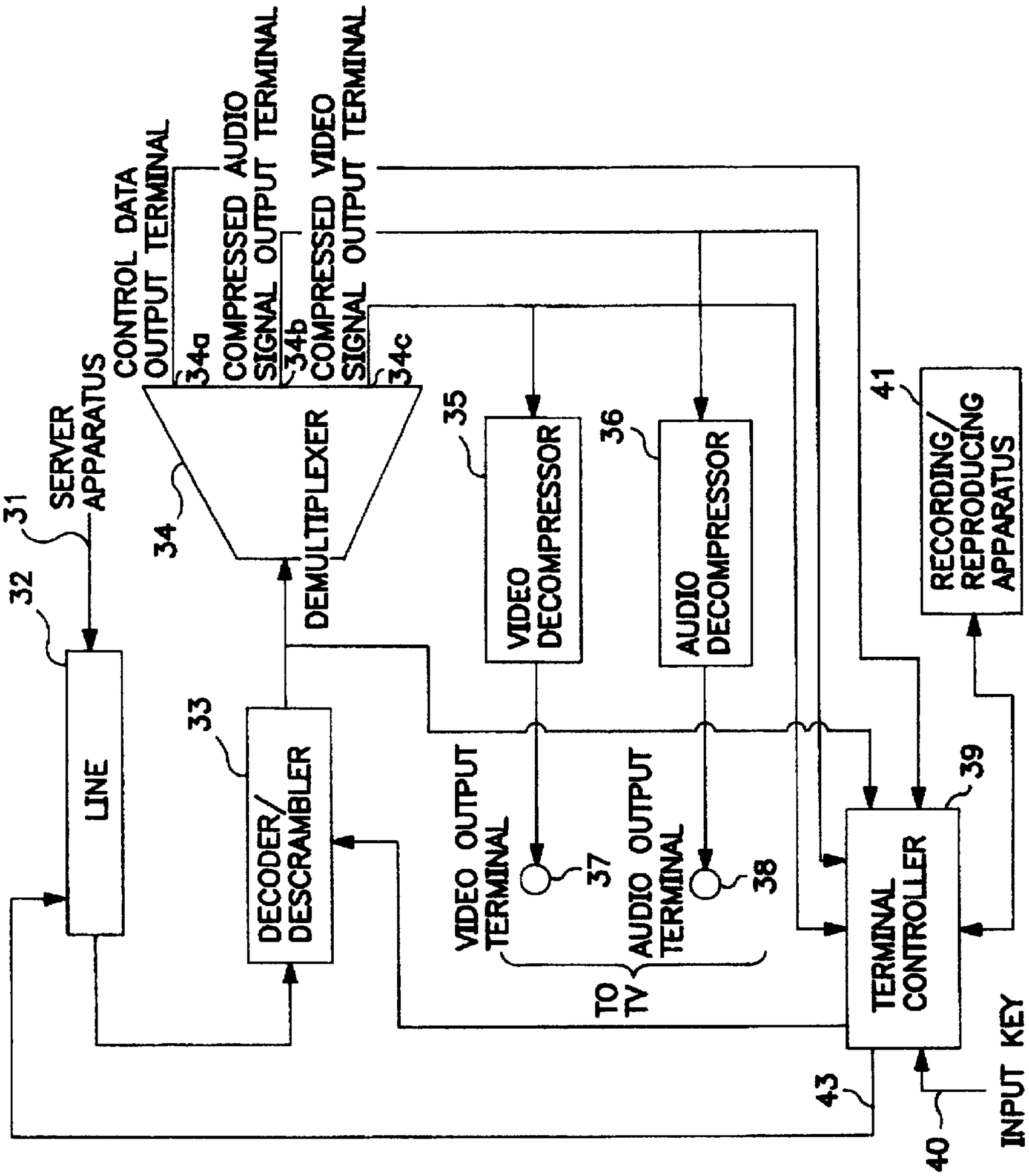

SERVER APPARATUS
31
32
LINE
DECODER/ DESCRAMBLER
33
DEMULTIPLEXER
34
34a
34b
34c
CONTROL DATA OUTPUT TERMINAL
COMPRESSED AUDIO SIGNAL OUTPUT TERMINAL
COMPRESSED VIDEO SIGNAL OUTPUT TERMINAL
VIDEO DECOMPRESSOR
35
AUDIO DECOMPRESSOR
36
VIDEO OUTPUT TERMINAL
37
AUDIO OUTPUT TERMINAL
38
TO TV
TERMINAL CONTROLLER
39
INPUT KEY
40
RECORDING/ REPRODUCING APPARATUS
41
43

FIG. 4

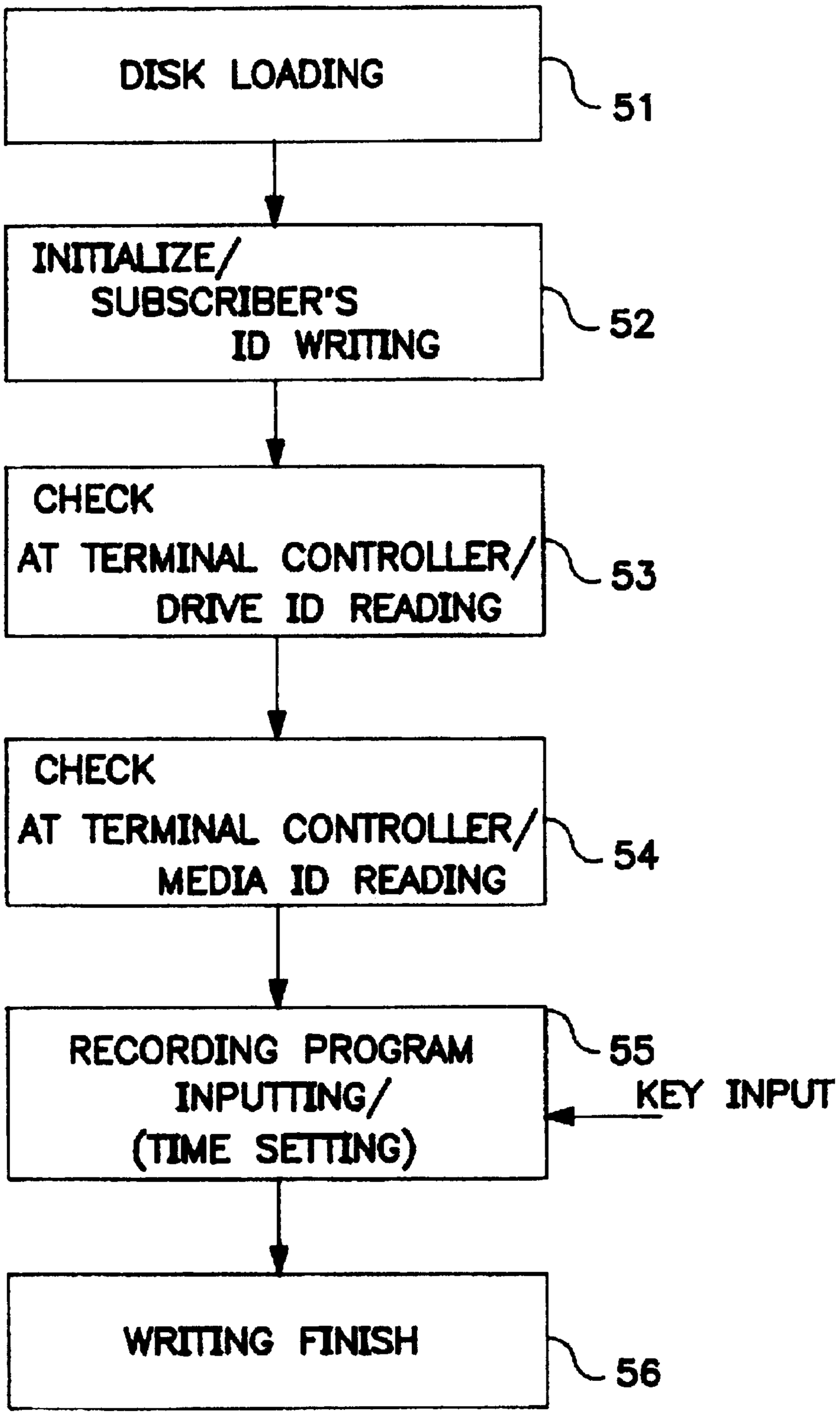

DISK LOADING
51
INITIALIZE/
SUBSCRIBER'S
ID WRITING
52
CHECK
AT TERMINAL CONTROLLER/
DRIVE ID READING
53
CHECK
AT TERMINAL CONTROLLER/
MEDIA ID READING
54
RECORDING PROGRAM
INPUTTING/
(TIME SETTING)
55
KEY INPUT
WRITING FINISH
56

FIG. 5

SERVER APPARATUS, SUBSCRIBER APPARATUS AND INFORMATION ON DEMAND SYSTEM

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.

CROSS-REFERENCE TO RELATED APPLICATIONS

Notice: More than one reissue application has been filed for the reissue of U.S. Pat. No. 5,790,172. The reissue applications are the present reissue application Ser. No. 09/594,152 filed on Jun. 12, 2000, and related reissue application Ser. No. 09/631,540 filed on Aug. 3, 2000, Ser. No. 09/631,542 filed on Aug. 3, 2000, Ser. No. 09/632,139 filed on Aug. 3, 2000, and Ser. No. 09/817,470 filed Mar. 26, 2001, now abandoned.

BACKGROUND OF THE INVENTION

(1) Field of the Invention

The present invention relates to an information on demand system which provides information to subscribers through a CATV network and process improvement of a system in which subscribers pay charge to a server according to provided amount of information. Accordingly, in an information on demand system in accordance with the present invention, a plurality of different charging system are provided for every form which a subscriber utilizes the information.

(2) Description of the Prior Art

In an information on demand system such as CATV, an information provider (server) and users (subscribers) make contract each other. CATV cables are provided between the server and the subscribers and an information such as an audio/video signal is provided from the server to the subscribers. In this case, there is basically only one charging system and the charging system is that the server periodically collects the same amount of charge even if the subscriber records an audio/video information provided by the server in a video tape recorder (VTR, hereafter) or the like that at the subscriber (receiver) side or the subscriber merely listens/watches the same information by a television receiver without recording it in a VTR.

In the above-mentioned charging system, however, different charging systems can be set for the same CATV line.

Especially, since audio/video information becomes to be transmitted by a digital signal, if the audio/video information which is composed of a digital signal is recorded in a recording medium such as a digital video tape recorder (VTR), a copy which has no deterioration in audio/video quality compared with an audio/video information provided by the server can be obtained at the subscriber side. This is a problem from a view point of copyright protection.

SUMMARY OF THE INVENTION

An information on demand system in accordance with the present invention aims at making subscribers of CATV terminals pay adequate charge to a CATV server. It makes possible to control a recording/reproducing apparatus (usually called merely a recorder) and to record a received information in a recording medium. Using an information on demand system in accordance with the present invention, the subscribers can pay adequate charge to the server according to the purpose for which the subscribers use the received information.

To solve the above-mentioned problem, an information on demand system in accordance with the present invention includes an information providing apparatus for providing an audio/video information according to a subscriber's request; a display terminal for displaying the audio/video information provided by the information providing apparatus; and a recording/reproducing apparatus for recording the audio/video information provided by the information providing apparatus; and is composed so that a different amount is charged to the subscriber among the case in which only the information is displayed on a display terminal, the case in which the information is recorded in a recording/reproducing apparatus and the case in which not only the information is displayed on a display terminal but also the information is recorded in a recording/reproducing apparatus.

Therefore, in a charging system of the information on demand system in accordance with the present invention, because the CATV server can check whenever the subscriber records a program provided to a recording medium through a CATV cable, the CATV server can charge at every subscriber's recording. In actual, a terminal controller writes at every time when recording is made and the server can check anytime if necessary.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram of an information on demand system in accordance with a first exemplary embodiment of the present invention.

FIG. **2** is a block diagram of a display terminal used in an information on demand system in accordance with the first exemplary embodiment of the present invention.

FIG. **3** is a block diagram of an information on demand system in accordance with a third exemplary embodiment of the present invention.

FIG. **4** is a block diagram of a subscriber apparatus used in an information on demand system in accordance with a fourth exemplary embodiment of the present invention.

FIG. **5** is a flow chart of a writing/reading action of a subscriber apparatus used in an information on demand system in accordance with a fourth exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

An information on demand system in accordance with exemplary embodiments of the present invention is explained below referring to drawings.

(First Exemplary Embodiment)

A block diagram of an information on demand system in accordance with a first exemplary embodiment of the present invention is shown in FIG. **1**. The left side shows a block diagram of a server apparatus at a server side of the system. The block **1** is a subscriber identification apparatus for reading an identification number (ID number, hereafter) for identifying every individual subscriber. Block **2** is an information providing apparatus for providing information through a line **11**. The information includes every information such as audio/video information such as movies, audio information such as music, town information showing what to see and where good restaurants are at sight-seeing spots and computer programs for games, etc.. Block **3** is a subscriber's mode recognizing apparatus for recognizing which the information is given to a subscriber's display terminal or a subscriber's recording/reproducing apparatus. Block **4** is a

charging apparatus for charging a different amount between the case in which the audio/video information is given to the subscriber's display terminal and the case in which the audio/video information is given to the subscriber's recording/reproducing apparatus. Block **5** is a charge registering apparatus provided for every subscriber and each charge registering apparatus **5** corresponding to a subscriber provided with an audio/video information accumulates the amount corresponding to the output of charging apparatus **4** based an a subscriber's identification information identified at subscriber identification apparatus **1**.

The right side of FIG. **1** shows a block diagram of a subscriber apparatus at a receiver side of the system. Block **6** is a provided information designating apparatus for reporting the information which the subscriber requests to the server. Block **7** is an information receiving apparatus for receiving the information which is provided from the server according to a subscriber's request. Block **8** is a subscriber's mode discriminating apparatus for discriminating which the output signal of information receiving apparatus **7** is provided to the subscriber's display terminal or to the subscriber's recording/reproducing apparatus and reports the subscriber's ID number to the server through line **11**. Block **9** is a recording/reproducing apparatus for recording the provided audio/video information outputted from subscriber's mode discriminating apparatus **8**. Although an optical disc is used as a recording/reproducing medium in the exemplary embodiment, any medium which can record and reproduce such as magnetic recording medium and semiconductor device may be used. Block **10** is a display terminal for outputting the audio/video information provided by subscriber's mode discriminating apparatus **8** as a sound and picture. Although a cathode ray tube (CRT, hereafter) is used as a picture display device in the exemplary embodiment, all devices which transmits information to a subscriber through subscriber's five senses, such as a liquid chrystal display device, picture forming apparatus displaying information on a copyable medium like paper such as a printer can be used. The block **11** is a wired CATV line and anything which can transmit information such as wired lines like a telephone line and wireless means like satellite communication may be used.

The performance of an information on demand system composed as the above is explained below. In the exemplary embodiment, a CATV cable is used for line **11**.

A subscriber designates an audio/video information which the subscriber wants to be provided through provided information designating apparatus **6**. Provided information designating apparatus **6** transmits a subscriber's ID number and an ID number of a designated audio/video information to a server side through line **11**. When the server apparatus receives the subscriber's ID number and the ID number of a requested audio/video information, subscriber identification apparatus **1** identifies the subscriber's ID number, judges whether the subscriber's ID number is registered. If the ID number is registered in the server side, the server outputs a signal to allow to provide the audio/video information to information providing apparatus **2** and if the ID number is not registered, the server outputs a signal to prohibit from providing the audio/video information to information providing apparatus **2**.

Information providing apparatus **2** which was allowed to provide the audio/video information transmits the audio/video information which the subscriber had requested to information receiving apparatus **7** through line **11**. Information receiving apparatus **7** demodulates (decodes) the received audio/video information. In the case in which the information signal is transmitted with a scrambled procedure, the signal is provided to subscriber's mode discriminating apparatus **8** after descrambling procedure. Subscriber's mode discriminating apparatus **8** outputs the audio/video information either to display terminal **10** such as a CRT or to recording/reproducing apparatus **9** according to the subscriber's request. At the same time, the subscriber's information is transmitted to subscriber's mode recognizing apparatus **3** at the server side through line **11**.

Subscriber's mode recognizing apparatus **3** which received an information from the subscriber outputs the information to charging apparatus **4**. Charging apparatus **4** is set so that the charging amount is larger when the audio/video information is provided to the subscriber's recording/reproducing apparatus **9** than when provided to the subscriber's display terminal **10** and outputs the charging amount to charge registering apparatus **5** according to the output of subscriber's mode recognizing apparatus **3**. Charge registering apparatus **5** accumulates the charging amount provided from charging apparatus **4**. The server can collect the charge from the subscriber every month according to the amount written in charge registering apparatus **5**.

In the case of an audio/video information such as movies, because it is necessary to record an audio/video information for several hours by a digital signal, an optical disk is used as recording/reproducing apparatus **9** in the exemplary embodiment.

(Second Exemplary Embodiment)

An information on demand system in accordance with a second exemplary embodiment of the present invention is explained below referring to FIGS. **1** and **2**. The blocks having similar functions to those in the first exemplary embodiment are numbered with the same reference numbers.

In FIG. **1**, recording/reproducing apparatus **9** is a magnetic disk drive. Display terminal **10** includes a CRT **21**, a central processing unit (CPU, hereafter) **22**, a semiconductor memory **23**, a reset circuit **24** and a timer **25** as shown in FIG. **2**. Semiconductor memory **23** receives and writes an information transmitted from information providing apparatus **2** through subscriber's mode discriminating apparatus **8**. CPU **22** executes a game according to an information from semiconductor memory **23**. CRT **21** displays a picture corresponding to the execution result. Timer **25** outputs a signal at a designated time after the information is written in semiconductor **23**. Reset circuit **24** resets and erases the information in semiconductor memory **23** according to the output signal of timer **25**. A telephone line is used as a line **11**.

The performance of the information on demand system is similar to that of the first exemplary embodiment. Because the information in semiconductor memory **23** of display terminal **10** is erased after a designated time, when the information is provided to display terminal **10**, the subscriber can enjoy a game for the designated time.

According to such a configuration of the system, it is possible to change a charging system between the case in which only one game is made and the case in which a game software is provided to the subscriber.

(Third Exemplary Embodiment)

An information on demand system in accordance with a third exemplary embodiment of the present invention is shown in FIG. **3**. The blocks having similar functions to those in the first exemplary embodiment are numbered with the same reference numbers. The left side shows a block

diagram of a server apparatus of the system and the right side shows a block diagram of a subscriber apparatus of the system.

Block **12** is a user's drive operating state logging apparatus for collecting information concerning to a user's drive operating state and has a configuration to collect each subscriber's charge and to write the charge information for every subscriber.

Charging apparatus **4** and charge registering apparatus **5** are included in the subscriber apparatus. Charging apparatus **4** charges a different amount between the case in which an audio/video information is provided to display terminal **10** and the case in which the audio/video information is provided to recording/reproducing apparatus **9** according to the output of subscriber's mode discriminating apparatus **8**. Charge registering apparatus **5** accumulates the charging amount according to the output of charging apparatus **4**.

The subscriber designates the title name of the program which the subscriber requests through provided information designating apparatus **6**. Provided information designating apparatus **6** transmits the requested title name and the ID number to the server side thorugh line **11**. When the server side receives the requested title name and the ID number, the server outputs a signal to allow to provide the audio/video information to information providing apparatus **2**.

Then, information providing apparatus **2** transmits the audio/video information which the subscriber requested to be provided to information receiving apparatus **7** through line **11**. Information receiving apparatus **7** outputs a signal to subscriber's mode discriminating apparatus **8** outputs the signal to either display terminal **10** or recording/reproducing apparatus **9** according to the subscriber's request. At the same time, subscriber's mode discriminating apparatus **8** outputs a signal specifying which the audio/video information is supplied to display terminal **10** or to recording/reproducing apparatus **9** to charging apparatus **4**. Charging apparatus **4** outputs a charge information from subscriber's mode discriminating apparatus **8** to charge registering apparatus **5**. Charge registering apparatus **5** accumulates the subscriber's charge amount according to the output signal from charging apparatus **4**.

User's drive operating state logging apparatus **12** collects the charge which is asn information concerning to the subscriber's ID number and the user's drive operating state at every month and from every subscriber and writes the charge information for every subscriber. The server can collect the accumulated amount based an the written charge information at every month from every subscriber.

According to the above-mentioned system, a different charging system from a usual charging system can be set when a copy is made without any deterioration in sound/picture quality. Especially, when an analog signal is provided to display terminal **10** and a demodulated and descrambled digital signal is provided in recording/reproducing apparatus **9** as they are, because an audio/video information having nearly same sound/picture quality as the server's software can be recorded in a recording medium provided in recording/reproducing apparatus **9** at the subscriber side, it is signaificant to provide multi charging systems.

Because it is not necessary to identify a subscriber's ID number at every time when the audio/video information is provided to the subscriber, the construction at the server side is simple and the time taken for providing information can be shortened.

A similar effect can be obtained by a construction that charge registering apparatus **6** periodically informs the subscriber's charge to the server by that the server periodically visits the subscriber and checks the charge displayed at the subscriber side, even if the system has no user's drive operating state logging apparatus **12** at the server side.

A construction without provided information designating apparatus **6** at the subscriber side can also set a different charging system from usual charging system when a copy without any quality deterioration in sound and picture is made.

(Fourth Exemplary Embodiment)

A block diagram of a subscriber apparatus of an information on demand system in accordance with a fourth exemplary embodiment of the present invention is shown in FIG. **4**.

Symbol **32** is a line for transmitting signals such as CATV audio/video information to subscribers. A server apparatus **31** transmits an audio/video information which is channel encoded (modulated) after being scrambled for secret to a subscriber side through line **32**. The audio/video information supplied from server apparatus **31** is a bit-stream with a packeted digital form. A decoder/descrambler **33** has a decoding function for decoding an encoded signal provided from server apparatus **31** and a descrambling function for converting a scrambled signal to an original audio/video signal.

A demultiplexer **34** converts a packet signal outputted from decoder/descrambler **33** into a parallel signal. Terminals **34**a, **34**b and **34**c are output terminals to output a control data, a compresssed audio signal and a compressed video signal, respectively. A video decompressor **35** decompresses the compressed video signal outputted from compressed video signal output terminal **34**c into an original video signal. An audio decompressor **36** decompresses the compressed audio signal outputted from compressed audio signal output terminal **34**b into an original audio signal. Terminal **37** is a video output terminal for supplying a video signal to a video signal input terminal of a television receiver and a VTR. Terminal **38** is an audio output terminal for supplying an audio signal to an audio signal input terminal of the television receiver and the VTR.

A terminal controller **39** manages the performance of the terminals by an input key **40** and a control data from control data output terminal **34**a. An output of a recording/reproducing apparatus **41** is supplied to terminal controller **39**. That is, a receiver at the subscriber side includes a decoder/descrambler **33** which is a demodulator/descrambler to demodulate and descramble an scrambled information transmitted from the server side, a terminal controller **39** which is supplied with an output signal of decoder/descrambler **33**, outputs a signal to a recording/reproducing apparatus **41** for recording an audio/video information in a recording medium in which a subscriber's ID number is written and controls supplying the output signal. Terminal controller **39** registers the subscriber's ID number which is written in a recording medium of recording/reproducing apparatus **41** and the information ID number which is provided by the server when the subscriber finishes recording the audio/video information provided from the server in the recording medium of recording/reproducing apparatus **41**.

Server apparatus **31** scrambles an audio/video information to provide to the subscriber for keeping secret, modulates (encodes) it to a form fitting line **32** and transmits the scrambled and modulated signal to the subscriber side through line **32**. Decoder/descrambler **33** which has received the modulated signal through line **32** demodulates and

descrambles the received signal and the output signal is released from scramble.

The performance when a provided audio/video information signal is outputted to a display terminal such as a television receiver is explained below.

The output signal of decoder/descrambler **33** is separated into a control data signal at demultiplexer **34** and the separated signals are outputted. The compressed audio signal outputted from output terminal **34**b is converted into an original audio signal at audio decompressor **36**, the compressed video signal outputted from output terminal **34**c is converted into an original video signal at video compressor **35**. As a compression method, for example, an MPEG method is used. The control data signal, the compressed video signal, the compressed audio signal from demultiplexer **34** and the output signal of decoder/descrambler **33** are inputted to terminal controller **39**. Both the audio signal at terminal **34**b and the video signal at terminal **34**c are compressed digital bit-stream signals and they are supplied to recording/reproducing apparatus **41** via terminal controller **39**. The audio/video information is recorded in the recording meadium by recording (writing) the compressed digital bit-stream at recording/reproducing apparatus **41**.

The performance when a provided audio/video information signal is recorded and reproduced at recording/reproducing apparatus **41** is explained below, referring to a flow chart shown in FIG. **5**.

Recording/reproducing apparatus **41** is controlled by terminal controller **39**. As an interface between recording/reproducing apparatus **41** and terminal controller **39**, for example, SCSI-2 (ANSI standard X3. 13-199X) is used.

A recording medium is loaded on recording/reproducing apparatus **41**. (action **51** in FIG. **5**)

A program which the subscriber wants to record is selected with input key **40** and a write command is given to terminal controller **39**. A subscriber's ID number to identify the subscriber and a title name of the program which the subscriber wants to record are written in a recording medium of recording/reproducing apparatus **41**. (action **52**)

A recording/reproducing apparatus ID number to identify the recording/reproducing apparatus **41**, the subscriber's ID number and the title name of the program are checked. (action **53**)

When all the recording/reproducing apparatus ID number, the subscriber's ID number and the title name of the program are confirmed to be those already registered, recording in the recording medium starts with a following procedure.

When one or more than one of the recording/reproducing apparatus ID number, the subscriber's ID number and the title name of the program are confirmed not to be those already registered, terminal controller **39** informs to the subscriber that the recording/reproducing apparatus ID number, the subscriber's ID number or the title name of the program is wrong. (action **54**)

Then, terminal controller **39** gives a command to start recording to recording/reproducing apparatus **41**. When the program which the subscriber requests is inputted through line **32**, recording/reproducing apparatus **41** starts recording. (action **55**)

When recording/reproducing apparatus **41** finishes recording, the fact that the recording finished is registered in terminal controller **39**. (action **56**)

Thus, the CATV server can manage the subscriber's charge, if necessary.

The subscriber apparatus is composed so that both the video signal and the audio signal outputted from video output terminal **37** and audio output terminal **38**, respectively, are outputted via terminal controller **39** as a compressed digital bit-stream and whether the ID number is written in the writing medium is checked at starting of recording and when the subscriber's ID number is not written, the audio/video information is not supplied to recording/reproducing apparatus **41**. Therefore, unless all the recording/reproducing apparatus ID number, the subscriber's ID number and the title name of the recorded program are registered, the subscriber can neither record the audio/video information in recording/reproducing apparatus **41** nor watch the program on the television receiver (display terminal).

Although a subscriber is identified by using a subscriber's ID number in the fourth exemplary embodiment of the present invention, a unique ID number of the recording/reproducing apparatus itself may be used instead of the subscriber's ID number. Similar effect is obtained in an information on demand system that an owner of the write/read device is discriminated from the unique ID number of the recording/reproducing apparatus itself and the charge is collected from the owner of the recording/reproducing apparatus.

The system can be also composed so that the server registers the title name of the program for a particular program and when the subscriber wants to write the title name, the terminal controller can check at the terminal controller if the subscriber is requesting a server's approval.

The charging system can be made so that the information can be reproduced by only a recording/reproducing apparatus which was used to record the audio/video information and by any other reproducing apparatus. In this case, the system is composed so that the descramble apparatus is connected to an arbitrary reproducing apparatus, the descramble apparatus certifies whether the medium in which the information was written has an approved ID number and only when reading from the medium certified by the descramble apparatus, the descramble apparatus performs normally.

According to an information on demand system in accordance with exemplary embodiments of the present invention, when a copy without any deterioration of sound/picture quality is made, a different charging system from usual charge can be set. Especially, when an analog signal is outputted to a recording/reproducing apparatus as they are, an audio/video information having almost same quality as the server's information is recorded in a recording medium of the recording/reproducing apparatus and it is significant to provide with three charging systems.

Because programs and informations are always recorded/written in recording medium based on a subscriber's ID number and a recording/reproducing apparatus ID number, it is possible to restrict a recording/reproducing apparatus used at reproducing.

The invention may be embodied in other specific form without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restructive, the scope of the invention being indicated by the appended claims rather than by the foregoing description and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed:

[1. An information on demand system comprising:

a server apparatus for providing information according to a request from a subscriber;

display means for displaying said information provided by said server apparatus; and

recording means for recording said information provided by said server apparatus;

wherein a different amount is charged to said subscriber among a) in the case in which said information is provided to said display means, b) in the case in which said information is provided to said recording means and c) in the case in which said information is provided to said display means and to said recording means.]

[2. An information on demand system comprising:

information providing means for providing information according to a request from a subscriber;

information receiving means for receiving said information provided by said information providing means;

display means for displaying a further information signal output from said information receiving means;

recording means for recording said further information signal of said information receiving means;

subscriber mode discriminating means for discriminating whether said further information signal of said information receiving means is provided to one of said display means and said recording means;

charging means for charging a different amount among a) in the case in which said further information is provided to said display means, b) in the case in which said further information is provided to said recording means and c) in the case in which said further information is provided to said display means and to said recording means according to an output of said subscriber mode discriminating means; and,

charge registering means for registering charge data output from said charging means.]

3. A server apparatus comprising:

subscriber identification means for reading an identifying information to identify a subscriber;

information providing means for providing information according to a request from said subscriber;

subscriber mode recognizing means for discriminating whether said information providing means provides said information a) to a subscriber display means, b) to a subscriber recording means or c) to said subscriber display means and said subscriber recording means;

charging means for charging a different amount among a) in the case in which said information is provided to said subscriber display means, b) in the case in which said information is provided to said subscriber recording means and c) in the case in which said information is provided to said subscriber display means and to said subscriber recording means according to an output of said subscriber mode recognizing means; and

charge registering means provided for every subscriber for registering a charge data output from said charging means; and wherein said charge registering means accumulates the charge data output from said charging means at said charge registering means corresponding to said identifying information according to a discriminating information discriminated at said subscriber identification means.

[4. A server apparatus comprising:

provided information designating means for providing information requested by a subscriber to a server;

information receiving means for receiving said information provided by said server according to said subscriber request;

subscriber mode discriminating means for discriminating whether an information signal output from said information receiving means is provided a) to a display means, b) to a recording means or c) to both the display means and the recording means and informing said subscriber through said information receiving means.]

[5. A subscriber apparatus comprising:

information receiving means for receiving a provided information according to a request from a subscriber;

subscriber mode discriminating means for discriminating whether a further information signal output from said information receiving means is provided a) to a display means, b) to a recording means or c) to both said display means and said recording means;

charging means for charging a different amount among a) in the case in which said further information is provided to said display means, b) in the case in which said further information is provided to said recording means and c) in the case in which said further information is provided to said display means and to said recording means according to an output of said subscriber mode discriminating means; and

charge registering means for accumulating an amount output from said charging means.]

[6. A subscriber apparatus as recited in claim 5; wherein the charge registering means periodically informs the subscriber's charge to a server.]

7. A subscriber apparatus comprising:

demodulating means for demodulating an information signal provided by a server; and

terminal control means for inputting a demodulated information signal of said demodulating means, outputting a signal to recording means which records said demodulated information signal in a recording medium in which a subscriber identification number is recorded and controlling supply of the output signal; and wherein

said terminal control means registers said subscriber identification number recorded in said recording medium of said recording means and an information identification number provided from said server in said terminal control means, when a subscriber finishes the recording of the information signal provided from said server in said recording medium of said recording means.

8. A subscriber apparatus as recited in claim 7; wherein

said demodulated information signal is not output to said recording means, when the subscriber identification number is not recorded in the recording medium of said recording means.

9. A subscriber apparatus as recited in claim 7 or 8; wherein

an identification number of said recording means is used instead of the subscriber identification number.

10. A subscriber apparatus as recited in claim 9 wherein:

said subscriber is determined from the identification number of said recording means; and

a charge is collected from said subscriber.

11. A subscriber apparatus as recited in claim 10 wherein when the subscriber records information provided from an information providing apparatus, said information can not be recorded unless the subscriber is approved by the server.

[12. A method for providing information on demand comprising the steps of:

receiving a request from a subscriber requesting information;

transmitting the information to at least one of a subscriber display means and a subscriber recording means for displaying and recording the information respectively, and

charging the subscriber one of a plurality of amounts depending upon whether the transmitted information is intended for recording on said recording means,

wherein said request for information indicates whether the subscriber is recording said information on said recording means.]

[13. An apparatus for providing information on demand comprising:

receiving means for receiving a request from a subscriber for information,

sending means for sending the information to at least one of a subscriber display means and a subscriber recording means for displaying and recording the information respectively, and

charging means for charging the subscriber one of a plurality of amounts depending upon whether the transmitted information is intended for recording on said recording means,

wherein said request for information indicates whether the subscriber is recording said information on said recording means.]

* * * * *