(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 853 847 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
21.05.2003 Bulletin 2003/21

(21) Application number: **97933801.9**

(22) Date of filing: **31.07.1997**

(51) Int Cl.[7]: **H04H 9/00**

(86) International application number:
PCT/GB97/02063

(87) International publication number:
WO 98/006193 (12.02.1998 Gazette 1998/06)

(54) **IMPROVED SYSTEM FOR COLLECTING DATA CONCERNING TRANSMITTED MATERIAL**

VERBESSERTES SYSTEM ZUR SAMMLUNG VON DATEN ÜBER GESENDETES MATERIAL

SYSTEME AMELIORE POUR COLLECTER DES DONNEES CONCERNANT UN ELEMENT DE PROGRAMME TRANSMIS

(84) Designated Contracting States:
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

(30) Priority: **01.08.1996 GB 9616176**

(43) Date of publication of application:
22.07.1998 Bulletin 1998/30

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EP-A- 0 425 347
WO-A-95/16313
WO-A-95/35606

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EP 0 853 847 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention relates to an improved system for collecting data concerning transmitted material received by a participant, for example, for collecting data concerning viewing of television advertisements and programmes.

[0002] The Applicant's published application WO95/35606 describes one embodiment of a data collection system in which potential participants of the system are sent a questionnaire containing questions relating to socio-geodemographic factors, in a similar form to known market research questionnaires. A participant interested in joining the system returns the questionnaire. The new participant is allocated a unique identity code and the participant data is retrieved from the completed questionnaire and stored in an association with that identity code. The participant, at a remote location, is then sent a data collection unit which is allocated the unique identity code. The data collection unit comprises a processing unit and a hand held unit. Transmitted television material is received via an aerial and coding data in lines 7 to 12 of the incoming signal (the so-called blanking interval) is retrieved.

[0003] When an advertisement appears on the television, the participant keeps a button of the hand held unit depressed. A signal representative of the depression of the button is sent to the processing unit and, as a result, the coding data currently being retrieved from the television signal by the processing unit together with the unique identity of the data collection unit, and the current time as a start time, are stored to a smartcard.

[0004] When the processing unit no longer receives a signal representative that the button is being depressed, the current time, as an end time, is sent to the smartcard. The on board microprocessor in the smartcard sorts the received data and calculates the attention time of the participant to each advert. Then, the data is stored in on the smartcard. Thus, after the adverts have finished, a number of advert slots may have been stored according to whether the viewer watched the advert and pressed the button. Each advert slot stores the advert coding, the transmission time coding, the attention time, the unique identity and the stored current time compared with the transmission coding time.

[0005] When full, the smartcard is posted to a central facility where stored data is retrieved for cross referencing with the data obtained when the participant initially obtained the data collection unit. Thus, a database of viewing data can be built up.

[0006] However, it has been found that the present smartcards become full very quickly so that they must be changed frequently thereby reducing the application of the system.

[0007] It is therefore an object of the present invention to provide an improved system for collecting data concerning transmitted material received by a participant.

[0008] According to one aspect of the present invention there is provided a method of collecting data concerning participant response to broadcast material, each participant being located at separate remote locations and having a data collection unit with a respective unique identity and comprising a store means and a manually operable device, the method comprising the steps of:-

transmitting to the participant locations broadcast material comprising an audience portion and a data portion;

storing a viewing record associated with said broadcast material to the store means of a data collection unit according to a predetermined participant operation of the manually operable device in response to said audience portion of said broadcast material;

characterised in that the step of transmitting comprises transmitting broadcast material to the participant locations according to a known schedule;

the data portion contains a validity defining portion capable of defining a valid or invalid transmission and the data collection unit includes a validity checking means to check said validity defining portion;

the step of storing a viewing record comprises storing the real time date and time derived from the broadcast material and storing information of the current participant response, provided that the validity checking means confirms the validity of said validity defining portion; and

said stored viewing records are cross matched with said known schedule and with said unique identity to ascertain the participant response to particular broadcast material.

[0009] Accordingly, it is possible to ensure that viewing records are stored only when it is confirmed that the validity defining portion is valid thereby avoiding fraudulent storage of data records. Furthermore, by cross matching the stored viewing records with the known schedule, it is not necessary to store data from the validity defining portion itself. All that is required is cross matching in time and date stamping of the viewing record and the transmission schedule. This enables a significant reduction in storage capacity for the viewing records thereby prolonging the lifetime of each store means before it is full.

[0010] In one embodiment, the length of time of said predetermined participant operation is monitored and the step of storing a viewing record comprises storing a representation of said time as information of the current participant response.

[0011] As a result, the viewing record can easily and simply show the amount of time the participant continues with the response.

[0012] In another embodiment, said data portion includes a character identifying a particular participant response and the step of storing a viewing record comprises storing said character as information of the cur-

rent participant response.

[0013] Preferably, the data portion includes an identity code and the step of storing a viewing record occurs when a new identity code occurs in the data portion.

[0014] In this way, each viewing record can be stored when a new identity code is present, the identity code comprising a part of the known schedule of broadcast material.

[0015] In another embodiment, the validity defining portion comprises a character in the identity code.

[0016] In a particular embodiment, the character identifying the particular participant response comprises a character in the identity code.

[0017] Conveniently, the method further comprises encrypting said data portion according to an encryption different from an encoding of said broadcast material.

[0018] As a result, viewing records will only be stored when the validity defining portion is correctly decrypted. This enhances the security of the method of collecting.

[0019] According to another aspect of the present invention there is provided a data collection system for collecting data concerning participant response to broadcast material, the system comprising:-

means for broadcasting to the participants broadcast material comprising an audience portion and a data portion;

a plurality of data collection units provided, in use, at separate remote participant locations, wherein each said data collection unit has a respective unique identity and comprises;-

a store means;

a manually operable device; and

a control means for storing a viewing record associated with said broadcast material to the store means according to a predetermined participant operation of the manually operable device in response to said audience portion of said broadcast material;

and wherein the system further comprises:-

a central controller comprising:-

means for storing data relating to system participants according to said unique identity; and means for reading the unique identity and said viewing records stored on a respective data collection unit store means;

characterised in that said means for broadcasting is arranged to broadcast a data portion containing a validity defining portion capable of defining a valid or invalid transmission and broadcasts the broadcast material according to a known schedule;

the data collection unit includes a validity checking means to check said validity defining portion;

the control means is configured to store a viewing record comprising the real time date and time derived from the broadcast material and stores information of the current participant response, provided that the validity checking means confirms the validity of said validity defining portion; and

a central controller comprises means for cross matching said stored viewing records with said known schedule and with said unique identity to ascertain the participant response to particular broadcast material.

[0020] Accordingly, it is possible to ensure that viewing records are stored only when it is confirmed that the validity defining portion is valid thereby avoiding fraudulent storage of data records. Furthermore, by cross matching the stored viewing record with the known schedule, it is not necessary to store data from the validity defining portion itself. All that is required is coordination in time and date stamping of the data record and the transmission schedule. This enables a significant reduction in storage capacity for the viewing records thereby prolonging the lifetime of each store means before it is full.

[0021] In one embodiment, the control means includes means to monitor the length of time of said predetermined participant operation and stores a representation of said time as information of the current participant response.

[0022] As a result, the viewing record can easily and simply show the amount of time the participant continues with the response.

[0023] In a preferred embodiment, said means for broadcasting broadcasts a data portion including a character identifying a particular participant response and in that the control means stores a viewing record comprising said character as information of the current participant response.

[0024] In another embodiment, said means for broadcasting broadcasts a data portion including an identity code and in that the control means operates to store a viewing record when a new identity code occurs in the data portion.

[0025] In this way, each viewing record can be stored when a new identity code is present, the identity code comprising a part of the known schedule of broadcast material.

[0026] Conveniently, said means for broadcasting broadcasts a data portion wherein the validity defining portion comprises a character in the identity code.

[0027] In a particular embodiment, said means for broadcasting broadcasts a data portion wherein the character identifying the particular participant response comprises a character in the identity code.

[0028] Preferably, said control means periodically checks the identity code.

[0029] As a result, the system starts a new data record when a new identity code is present.

[0030] In another preferred embodiment, said means for broadcasting broadcasts said data portion encrypted

according to an encryption different from an encoding of said broadcast material.

[0031] As a result, viewing records will only be stored when the validity defining portion is correctly decrypted. This enhances the security of the system.

[0032] An example of the present invention will now be described, with reference to the accompanying drawings, in which:-

Figure 1 illustrates a central controller embodying the present invention;
Figure 2 is a schematic overview of the system of the present invention;
Figure 3 illustrates a data collection unit embodying the present invention at a participant location; and
Figure 4 illustrates a flow diagram for the operation of a receiver unit of the data collection unit shown in figure 3.

[0033] One embodiment of the present invention will now be described with reference to the drawings for a viewing based system although it will be apparent that an audio based broadcast system could be employed.

[0034] To summarise the system of this embodiment, it is the intention to provide a system whereby participants (viewers) at a remote location are encouraged to view broadcast adverts by enabling them to collect points for viewing those adverts, the points being exchangeable for coupons, vouchers, prizes, goods etc.

[0035] Moreover, the participants are to be encouraged to respond to direct response propositions (DRP's). The viewing of the adverts and the response to DRP's are stored as viewing records on smartcards which are then sent to a central controller. The viewing records are cross referenced with advert and program schedules provided by the broadcaster and with participant supplied demographic data in order to provide details on viewing habits and on viewers responses to DRP's.

[0036] Referring to figure 1, a central controller 31 comprises a main central processing unit (CPU) 32 connected to a read only memory 33 storing control programs for the controller. The CPU 32 is also connected to conventional peripherals in the form of a printer 34, a keyboard 35 and a screen 36. The CPU 32 is also connected to a participant supplied data store 37, a viewing record store 38, a schedule store 39, and a smartcard reader 40. A dedicated printer 41 may also be connected for printing vouchers or coupons. The functions of this printer 41 could be amalgamated with the printer 34.

[0037] The various memory or store components are illustrated separately for the purpose of clarity, but may of course be partitioned sections of a single memory unit. Moreover, as a person skilled in the art will appreciate, the aforementioned components, with the exception of the smartcard reader 40, are standard components associated with computers and the detailed interconnection, function and running of these components are readily apparent. All components are connected by appropriate buses.

[0038] Referring to figure 2, material for broadcast, such as television adverts and programs, are processed by a processing unit 51. In this unit, a commercial identity number (CIN number) is inserted into the material.

[0039] In the present example, the CIN number comprises 23 character code. For adverts, the CIN number of the present embodiment represents a) the agency responsible for the advert, b) the client , c) the advert identity number, d) the region where the advert is to be transmitted, e) the duration of the advert, and f) a status flag as the 21st character representing one of L (left), R (right), B (both), F (flashing). As long as the 21st flag character is one of L, R, B or F the CIN number is considered "valid/genuine" otherwise it is considered "invalid/non-genuine". The following characters identify the particular DRP.

Telephone Numbers: TN
Addresses: CA (client address)
Vote Casting: VC
Programme Scoring: PS
Advert Scoring: AS
Purchases Made: PM
Sample/Voucher Request: SV
Game Points/Prizes: GP
Text Request: OT (other text)

The purpose of this will become apparent hereinafter.

[0040] The adverts are broadcast so that they are accompanied by the transmission of a genuine CIN number together with additional information, for example, telephone numbers, addresses etc. and other DKP's tacked on. This transmission is every 5 seconds in the present embodiment and the CIN number and additional information is encrypted before transmission. For security purposes, ordinary programs also have a CIN number transmitted therewith, but of a non-genuine nature.

[0041] It will be apparent to a person skilled in the art that other methods of labelling or ascertaining that a CIN number is genuine or non-genuine can be employed. Furthermore, the size of the CIN number can be changed and its format further altered. The significance of the CIN number is that it provides an encrypted key which enables points and responses to DKP's to be stored by the participant provided the key, after decryption, is the correct one, i.e., it is genuine.

[0042] The 22nd or 23rd characters will be allocated according to the nature of the DRP's transmitted. It will be apparent that the manner of encryption and decryption can be changed, either in a dynamic or static manner.

[0043] The CIN number is located within the television signal as follows, although this is only by way of example based on the transmission system in the United Kingdom.

[0044] As is known in the art, a television transmission frame comprises a number of lines all coordinated by synchronization pulses. In the United Kingdom, the lines used for picture data are interlaced to give a total of 625 scanning lines. An additional period equivalent to 25 lines is also provided, known as the vertical blanking period, which allows the receiver to flyback to the top of the screen for the next frame. The CIN number and any additional information are encoded according to a particular algorithm and are transmitted within these 25 lines, preferably within lines 7 to 12. The location of these six lines within a received television frame is precise and hence the CIN number and other information encoded therein can be precisely extracted. It should be noted that the real time date and time, and the transmission region can be extracted from packet 8/30 within these lines.

[0045] Thus, referring to figure 2 again, the CIN number and any additional information is broadcast from a broadcast location 52 along route 53 to a plurality of participant locations 54_1 to 54_n. The route 53 can, for example only, take the form of broadcasts from a transmitter, a satellite or via cable.

[0046] Figure 3 illustrates the arrangement at the participant location. Each system participant has a data collection unit comprising a receiver unit 1 and a handset 17.

[0047] The receiver unit 1 has an input 2 connected to the so-called scart socket of a television 3. The incoming television signals at input 2 are relayed to a decoding and extracting circuit 4. This circuit extracts the data within the above mentioned lines and decodes data in the broadcast which has been encrypted according to a predetermined algorithm, preferably of the rolling key decryption type. As a result, the CIN number is decoded therefrom along with any additional information.

[0048] A central processing unit (CPU) 5 inputs the currently received CIN number along a line 6 connected to the decoding and extracting circuit 4 and relays this number to a validation unit 7 on a line 8. The validation unit 7 checks whether the currently received CIN number is genuine or not, that is to say whether it is an authentic/valid number or not. If the validation unit 7 detects a genuine CIN number, then a signal on a line 9 connected to the CPU 5 is set high.

[0049] The CPU 5 is also connected to a CIN number memory 10, a temporary memory 11, a counter 12, a 2X20 backlit display 13, and a smart card connector 14 for connection to a smart card (not shown) loaded into a bay 15. The CPU 5 is also connected by a line 60 to the output of a light receiving unit 16 in communication with the handset 17, yellow (left) and red (right) LED's 18 and 19, and a segmented memory 28.

[0050] The handset 17 comprises a light emitting unit 21 and six buttons. The light emitting unit 21 communicates with the light receiving unit 16 of the receiver unit 1 using a known type of infrared communication link. One of the buttons is an information retrieval button 22 which is coloured mauve. When this button is depressed, the light emitting unit 21 sends a code to the light receiving unit 16 and the output of the latter on line 60 is detected by the CPU 5 so that the segmented memory 28 is accessed and a portion of the contents thereof are displayed on the display 13. As a result, a particular heading of the segmented memory is accessed. In the present case, there are 7 areas of segmented memory as follows:-

Telephone number	350 characters
Addresses	550 characters
Scoring	125 characters
Voting	125 characters
Purchases	250 characters
Samples/Voucher	100 characters
Game points/Prizes	100 characters
Text	500 characters

Each segmented part of the memory 18 is limited as above so that new information overwrites old information. In order to scroll through the selected heading, blue coloured UP/DOWN buttons 23 can be depressed to find the required entry. When the buttons are depressed, the light emitting unit 21 sends a code to the light receiving unit 16 and the output of the latter on line 60 is detected by the CPU 5 so that the contents of the particular heading of the segmented memory 28 is scrolled and the appropriate portion displayed on display 13.

[0051] The handset also has a green direct response participation button 24 together with a yellow left LED lit collect points button 25 and a red right LED lit collect points button 26. The latter two buttons in combination decide how and when points are to be collected.

[0052] There now follows an explanation of the running of the system in conjunction with figure 4 which illustrates a flow diagram of the operation of the receiver unit 1.

[0053] When a participant wishes to join the system, a detailed household information and lifestyle survey is completed by the participant (a household and individual members) in a similar manner to published application WO95/35606. The results thereof are entered via keyboard 35 into the participant supplied data store 37, cross referenced to a unique identify code. Then, a data collection unit comprising the receiver unit 1 and handset 17 is sent to the participant along with a blank smartcard. The receiver unit 1 has the unique identity code preloaded in the CPU memory.

[0054] When the participant receives the data collection unit, they connect the input 2 to the scart socket of the television 3, plug in power, install the blank smartcard in the bay 15, and switch on the television 3.

[0055] Referring to figure 4, initially, in step S1, when power is applied to the receiver unit, an initiate values program is called. This involves various flags being initialised before the routine proceeds to step S2. In addi-

tion, the CPU 5 checks whether the unique identity code has been written to the blank smartcard and if not, the identity code is written to a predetermined location of the smartcard. In this way, each smartcard that is sent back to the central controller contains the identity code at a known location of the smartcard enabling simpler processing of the viewing records thereon. In addition, it enables blank smartcards to be sent out to participants rather than having to sort pre-labelled smartcards.

[0056] In step S2, the CPU checks whether the currently received CIN number appearing on line 6 corresponds with the CIN number presently stored in the CIN number memory 10. Initially, the stored CIN number is likely to be different to the currently received CIN number, so control proceeds to step S3. In this step, a flag F_MEM is checked to see if it has a value 1. If the flag is equal to 1, then there is data in the form of a viewing record residing in the temporary memory 11 that must be written to the smartcard and this occurs in step S4 before the memory 11 is cleared. If flag F_MEM is zero indicating either that there is no data in temporary memory 11 or that the data is to be retained, then step S4 is skipped.

[0057] Thereafter, control proceeds to step S5 where a flag F_CIN and F_STA are both set to a value 1. The flag F_CIN represents that a new CIN number has been received and flag F_STA indicates that this is the first detection of that CIN number. Then, control proceeds to step S6. If in step S2 the CPU 5 finds that the currently received CIN number appearing on line 6 corresponds with the CIN number presently stored in the CIN number memory 10, then control proceeds straight to step S6.

[0058] In step S6, the CPU 5 checks whether a flag F_GEN has a value of 1, that is to say, is the status of line 9 high. As mentioned above, line 9 becomes high when the validation unit 7 ascertains that the currently received CIN number is a genuine CIN number. If flag F_GEN is zero, then control returns to step S2. Otherwise, control proceeds to step S7 where the currently received CIN number overwrites the CIN number presently stored in CIN number memory 10.

[0059] Thereafter, in step S8, the CPU 5 checks whether a flag F_PCB has a value of one, that is to say, whether the light receiving unit 16 is outputting an appropriate signal on line 60 indicating that points should be collected. If the flag F_PCB has a value of zero, control returns to step S2. Otherwise, control proceeds to step S9 where it is checked whether the flag F_CIN has a value of 1 representing a new CIN number which has now been determined to be a genuine CIN number.

[0060] Initially, it is likely that a new CIN number will be received and accordingly control proceeds to step S10. At this point, the CPU 5 writes to temporary memory 11 the region code together with the real time date and time extracted from packet 8/30 as mentioned above. It should be appreciated that this information or data is not obtained from the CIN number itself.

[0061] Thereafter, control proceeds to steps S11 where flag F_MEM is set to 1 to indicate that there is data in the temporary memory 11 to be written to the smartcard (at step S4) and flag F_CIN is set to zero since the CIN number is now no longer considered a new number. Control then proceeds to step S12. If in step S9 the CPU 5 finds that the flag F_CIN is zero, then control proceeds straight to step S12.

[0062] In step S12, the CPU 5 checks whether the flag F_STA has a value of one, that is to say, is this the first detection of the current CIN number. If it is the first time, then the flag F_STA has a value of 1 from step S5 and control proceeds to step S13 where counter 12 is started. The content of this counter is normally incremented by 1 for every one second that passes. Thereafter, the flag F_STA is cleared (set to zero) in step S14 and control proceeds to step S15. If in step S12 the CPU finds that the flag F_STA is already zero, then control proceeds straight to step S15.

[0063] In step S15, the CPU 5 checks whether the count in counter 12 is greater than or equal to a value of 5. If the count is greater than or equal to a value of 5, then control proceeds to step S16 where 5 points are added to the points slot of temporary memory 11. Then, the count in counter 12 is decremented by 5 in step S17 and control returns to step S2.

[0064] If the count has not yet reached 5 in step S15, then control proceeds to step S18 where it is checked that the flag F_PCB still has a value of 1. If the flag F_PCB is still 1, then control returns to step S15 to check the contents of the counter 12 again. However, if the flag F_PCB is now zero, a pause of 3 seconds is provided by step S19 before it is again checked whether the flag F_PCB has a value of 1 in step S20. If the flag F_PCB is 1 again, then control returns to step S15 to repeat the check of the contents of the counter 12. Otherwise, the counter 12 is stopped and cleared in step S21 before control returns to step S2.

[0065] As a result, when a participant depresses one or both of buttons, 25 and 26, the flag F_PCB is set to 1 via the light receiving unit 16. Accordingly, as soon as the CPU 5 determines that a new genuine CIN number has been received, via line 6, the region together with the real time date and time are written into the temporary memory 11. In addition, for every 5 seconds that one or both buttons 25 and 26 remain depressed, 5 points are added to the points slot of the memory 11. If the participant releases one or both of buttons 25 and 26 for longer than 3 seconds (step S19), then the counter 12 stops counting and points are no longer added to the memory 12. The gap of 3 seconds is chosen to give the participant time to depress button 24 to respond to a DRP. When the currently received CIN number changes and becomes a new genuine CIN number, the contents of the memory 11 are written to the smartcard as a viewing record and the memory is then cleared. Thus, each time the CIN number changes and remains a genuine CIN number, the contents of memory 11 are written to the smartcard as a viewing record.

[0066] The smartcard does not store the CIN number or the unique identity code when the flag F_PCB has a value of 1 representing depression of one or both of buttons 25 and 26. Instead, all that is written to the smartcard as a viewing record is the region in which the advert was received, the start time and date of viewing of the received advert together with the total number of points allocated to the viewing of that advert. This represents just 3 bytes of information. It will be appreciated that the points represent 1 second intervals of viewing. Thus, provided one or both buttons 25 and 26 are depressed at least once during an advert containing a genuine CIN number, then points will begin to be counted.

[0067] The present operation arranges for the CPU 5 to active the LED's 18 and/or 19 according to the value of the status flag. If one or both LED,s 18 and 19 are lit, the CPU will only consider that F_PCB has a value of 1 if the appropriate buttons 25 and 26 are pressed. For example, if the yellow LED 18 is lit, then the yellow button 25 must be depressed. The occurrence of flashing LED's 18 and 19 can be employed to alert the participant to say a double points collection opportunity. In this case, the count rate for counter 12 is doubled. It will be appreciated that a less sophisticated arrangement can be used using just a single button to collect points.

[0068] At any time, the participant can store the aforementioned additional information accompanying the CIN number by depressing the green button 24. With the depression of the button 24, the additional information such as telephone numbers, addresses etc, are stored under the correct heading in the segmented memory. The correct heading is selected according to the 22nd and 23rd characters of the CIN number. Alternatively, the use of button 24 may be considered a response to a DRP. In this case, the use of the button 24 is stored as a further byte of information in the current viewing record stored in the temporary memory 11. The stored information identifies the DRP according to the 22nd and 23rd characters of the CIN number. For example, with a particular CIN number, the participant can be asked to respond YES. This is stored in the viewing record. Then, the CIN number is changed. As a result, the current viewing record in memory 11 is stored to the smartcard. Then, the participant can be asked to respond NO. Since this viewing record is different, by suitable correlation of the time and date in the viewing record, it is possible to extract responses to DRP's. The use of the button 24 is considered to render the flag F_PCB to have a value of 1. In a similar manner it is possible to tell when the participant stores a telephone number etc. in response to DRP's.

[0069] The CPU 5 is programmed so that after 2 weeks it will display on display 13 a message requesting the participant to return the smartcard and insert a spare blank smartcard. Thus, data processing can be achieved on a regular basis.

[0070] With the present invention, it is possible to obtain large amounts of useful data concerning participants viewing habits and their responses without using large amounts of memory on the smartcard by having the CIN number act as a key to unlock the receiver unit to enable the participant to use the data collection unit to collect points. This enables smartcards to be used which have a useful lifetime before they become full, at least 2 weeks thereby overcoming the above mentioned problems of the prior art. In essence, a key is transmitted with programs or adverts which the receiver unit can check is genuine before allowing any points collection. The key is transmitted in an encrypted form thereby making it difficult to forge. The display 13 is normally arranged to display the total number of points stored on the smartcard.

[0071] When the smartcards are returned by post to the central controller 31, they are inserted into the reader 40 where the data of the stored viewing records are read under the control of the CPU 32. The processed data is stored in the viewing record store 38 according to identity code. According to the total points count on a smartcard, the central controller 32 allocates a value amount to the unique identity code on the smartcard and can automatically print an appropriate letter and, for example, a voucher from the printer 41 or a regular statement of points.

[0072] At the same time, the broadcasters provide time schedules of all adverts and programs transmitted each day. This information is processed and stored in the schedule store 39. The viewing records stored in the viewing record store can now be cross referenced with the schedule data in the schedule store 39. In this way, it is possible to ascertain which programs or adverts were viewed for each viewing record and to ascertain any responses to DRP's.

[0073] In addition, by entering suitable search parameters, the central controller 32 can access the store 37 as well as stores 38 and 39 to extract information such as the number of participants who watched particular adverts on a specific date; the number of participants who provided a particular response to a DRP; analysis according to selected socio-geodemographic factors of the participant data, etc.

[0074] With such information, it is possible to provide advertisers, broadcasters and their agencies with valuable information allowing them to assess the impact of adverts in raw terms of say overall numbers or to assess the impact of adverts in more refined terms of, say, socio-geodemographic grouping or to assess the responses to DRP's.

[0075] It will be appreciated that because the viewing record uses the real time from packet 8/30, video copies of adverts will not work with the present system thereby avoiding abuse of the system.

[0076] It will be appreciated that the above embodiment of the present invention is capable of considerable modification. For example, whilst the reader 40 reads received smartcards, the reader 40 could read the data collection units at the participant location by using, say,

modem connection or the like. Furthermore, the data collection unit need not be a stand alone unit, but can comprise part of the television unit or some other unit. Similarly, the handset can be incorporated with existing handsets.

[0077] It will also be appreciated that the term "transmitted material" can take the form of at least television transmission and radio transmission, and the material can be transmitted via broadcast networks such as satellite transmissions, local antennas or via cable, telephone lines etc.

Claims

1. A method of collecting data concerning participant response to broadcast material, each participant being located at separate remote locations (54_1 to 54_n) and having a data collection unit (1) with a respective unique identity and comprising a store means and a manually operable device (17), the method comprising the steps of:-

transmitting to the participant locations broadcast material comprising an audience portion and a data portion;
storing a viewing record associated with said broadcast material to the store means of a data collection unit according to a predetermined participant operation of the manually operable device in response to said audience portion of said broadcast material;

characterised in that:

the step of transmitting comprises transmitting broadcast material to the participant locations according to a known schedule;
the data portion contains a validity defining portion capable of defining a valid or invalid transmission and the data collection unit includes a validity checking means (7) to check said validity defining portion;
the step of storing a viewing record comprises storing the real time date and time derived from the broadcast material and storing information of the current participant response, provided that the validity checking means confirms the validity of said validity defining portion; and
said stored viewing records are cross matched with said known schedule and with said unique identity to ascertain the participant response to particular broadcast material.

2. A method according to claim 1 **characterised in that** the length of time of said predetermined participant operation is monitored and **in that** the step of storing a viewing record comprises storing a representation of said time as information of the current participant response.

3. A method according to claim 1 or 2 **characterised in that** said data portion includes a character identifying a particular participant response and **in that** the step of storing a viewing record comprises storing said character as information of the current participant response.

4. A method according to claim 2 or 3 **characterised in that** the data portion includes an identity code and **in that** the step of storing a viewing record occurs when a new identity code occurs in the data portion.

5. A method according to claim 4 **characterised in that** the validity defining portion comprises a character in the identity code.

6. A method according to claim 4 or 5 as dependent on claim 3 **characterised in that** the character identifying the particular participant response comprises a character in the identity code.

7. A method according to any preceding claim further comprising encrypting said data portion according to an encryption different from an encoding of said broadcast material.

8. A data collection system for collecting data concerning participant response to broadcast material, the system comprising:-

means for broadcasting to the participants broadcast material comprising an audience portion and a data portion;
a plurality of data collection units (1) provided, in use, at separate remote participant locations (54_1 to 54_n), wherein each said data collection unit has a respective unique identity and comprises:-

a store means;
a manually operable device; and
a control means for storing a viewing record associated with said broadcast material to the store means according to a predetermined participant operation of the manually operable device in response to said audience portion of said broadcast material;

and wherein the system further comprises:-

a central controller comprising:-

means for storing data relating to system

participants according to said unique identity; and means for reading the unique identity and said viewing records stored on a respective data collection unit store means;

characterised in that:

said means for broadcasting is arranged to broadcast a data portion containing a validity defining portion capable of defining a valid or invalid transmission and to broadcast the broadcast material according to a known schedule;
the data collection unit includes a validity checking means (7) to check said validity defining portion;
the control means is configured to store a viewing record comprising the real time date and time derived from the broadcast material and to store information of the current participant response, provided that the validity checking means confirms the validity of said validity defining portion; and
a central controller comprises means for cross matching said stored viewing records with said known schedule and with said unique identity to ascertain the participant response to particular broadcast material.

9. A system according to claim 8 **characterised in that** the control means includes means for monitoring the length of time of said predetermined participant operation and is configured to store a representation of said time as information of the current participant response.

10. A system according to claim 8 or 9 **characterised in that** said means for broadcasting is arranged to broadcast a data portion including a character identifying a particular participant response and **in that** the control means is configured to store a viewing record comprising said character as information of the current participant response.

11. A system according to claim 9 or 10 **characterised in that** said means for broadcasting is arranged to broadcast a data portion including an identity code and **in that** the control means is configured to store a viewing record when a new identity code occurs in the data portion.

12. A system according to claim 11 **characterised in that** said means for broadcasting is arranged to broadcast a data portion wherein the validity defining portion comprises a character in the identity code.

13. A system according to claim 11 or 12 as dependent on claim 10 **characterised in that** said means for broadcasting is arranged to broadcast a data portion wherein the character identifying the particular participant response comprises a character in the identity code.

14. A system according to any one of claims 11 to 13 wherein said control means is configured to periodically check the identity code.

15. A system according to any one of claims 8 to 14 **characterised in that** said means for broadcasting is arranged to broadcast said data portion encrypted according to an encryption different from an encoding of said broadcast material.

Patentansprüche

1. Verfahren zum Sammeln von Daten in Bezug auf eine Teilnehmerreaktion auf Rundsendematerial, wobei jeder Teilnehmer bei separaten entfernten Stellen (54_1 - 54_n) angeordnet ist und eine Datensammeleinheit (1) mit einer jeweiligen eindeutigen Identität und eine Speichereinrichtung und eine manuell betätigbare Vorrichtung (17) aufweist, wobei das Verfahren die folgenden Schritte aufweist:

Senden von Rundsendematerial mit einem Zuhörerschaftsteil und einem Datenteil;
Speichern einer zu dem Rundsendematerial gehörenden Anschauaufzeichnung zur Speichereinrichtung einer Datensammeleinheit gemäß einer vorbestimmten Teilnehmeroperation der manuell betätigbaren Vorrichtung in Reaktion auf den Zuhörerschaftsteil des Rundsendematerials;

dadurch gekennzeichnet, dass:

der Schritt zum Senden ein Senden von Rundsendematerial zu den Teilnehmerstellen gemäß einem bekannten Zeitplan aufweist;
der Datenteil einen gültigkeitsdefinierenden Teil enthält, der eine gültige oder nicht ungültige Übertragung definieren kann, und die Datensammeieinheit eine Gültigkeitsprüfeinrichtung (7) zum Prüfen des gültigkeitsdefinierenden Teils enthält;
der Schritt zum Speichern einer Anschauaufzeichnung ein Speichern des Datums und der Zeit in Echtzeit aufweist, die vom Rundsendematerial abgeleitet werden, und ein Speichern von Information über die aktuelle Teilnehmerreaktion, vorausgesetzt, dass die Gültigkeitsprüfeinrichtung die Gültigkeit des gültigkeitsdefinierenden Teils bestätigt; und

die gespeicherten Anschauaufzeichnungen an den bekannten Zeitplan und an die eindeutige Identität angepasst sind, um die Teilnehmerreaktion auf bestimmtes Rundsendematerial festzustellen.

2. Verfahren nach Anspruch 1, **dadurch gekennzeichnet, dass** die Zeitlänge der vorbestimmten Teilnehmeroperation überwacht wird und dass der Schritt zum Speichern einer Anschauaufzeichnung ein Speichern einer Darstellung der Zeit als Information über die aktuelle Teilnehmerreaktion aufweist.

3. Verfahren nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** der Datenteil ein Zeichen enthält, dass eine bestimmte Teilnehmerreaktion identifiziert, und dass der Schritt zum Speichern einer Anschauaufzeichnung ein Speichern des Zeichens als Information über die aktuelle Teilnehmerreaktion aufweist.

4. Verfahren nach Anspruch 2 oder 3, **dadurch gekennzeichnet, dass** der Datenteil einen Identitätscode enthält, und dass der Schritt zum Speichern einer Anschauaufzeichnung auftritt, wenn ein neuer Identitätscode im Datenteil auftritt.

5. Verfahren nach Anspruch 4, **dadurch gekennzeichnet, dass** der gültigkeitsdefinierende Teil ein Zeichen im Identitätscode aufweist.

6. Verfahren nach Anspruch 4 oder 5, wenn er vom Anspruch 3 abhängt, **dadurch gekennzeichnet, dass** das Zeichen, das die bestimmte Teilnehmerreaktion identifiziert, ein Zeichen im Identitätscode aufweist.

7. Verfahren nach einem der vorangehenden Ansprüche, das weiterhin ein Verschlüsseln des Datenteils gemäß einer Verschlüsselung aufweist, die unterschiedlich von einer Codierung des Rundsendematerials ist.

8. Datensammelsystem zum Sammeln von Daten in Bezug auf eine Teilnehmerreaktion auf Rundsendematerial, wobei das System folgendes aufweist:

eine Einrichtung zum Rundsenden von Rundsendematerial mit einem Zuhörerschaftsteil und einem Datenteil zu den Teilnehmern;
eine Vielzahl von Datensamrneleinheiten (1), die bei einem Einsatz bei separaten entfernten Teilnehmerstellen (54_1 - 54_n) vorgesehen sind, wobei jede Datensammeleinheit eine jeweilige eindeutige Identität hat und folgendes aufweist:

eine Speichereinrichtung;
eine manuell betätigbare Vorrichtung; und
eine Steuereinrichtung zum Speichern einer zum Rundsendematerial gehörenden Anschauaufzeichnung zur Speichereinrichtung gemäß einer vorbestimmten Teilnehmeroperation der manuell betätigbaren Vorrichtung in Reaktion auf den Zuhörerschaftsteil des Rundsendematerials;

und wobei das System weiterhin folgendes aufweist:

eine zentrale Steuerung, die folgendes aufweist:

eine Einrichtung zum Speichern von Daten in Bezug auf Systemteilnehmer gemäß der eindeutigen Identität; und
eine Einrichtung zum Lesen der eindeutigen Identität und der Anschauaufzeichnungen, die bei einer Speichereinrichtung einer jeweiligen Datensammeleinheit gespeichert sind;

dadurch gekennzeichnet, dass:

die Einrichtung zum Rundsenden eingerichtet ist, um einen Datenteil rundzusenden, der einen gültigkeitsdefinierenden Teil enthält, der eine gültige oder eine ungültige Übertragung definieren kann, und um das Rundsendematerial gemäß einem bekannten Zeitplan rundzusenden;
die Datensammeleinheit eine Gültigkeitsprüfeinrichtung (7) enthält, um den gültigkeitsdefinierenden Teil zu prüfen;
die Steuereinrichtung konfiguriert ist, um eine Anschauaufzeichnung mit dem Datum und der Zeit in Echtzeit zu speichern, die vom Rundsendematerial abgeleitet sind, und um Information über die aktuelle Teilnehmerreaktion zu speichern, vorausgesetzt, dass die Gültigkeitsprüfeinrichtung die Gültigkeit des gültigkeitsdefinierenden Teils bestätigt; und
eine zentrale Steuerung eine Einrichtung zum Anpassen der gespeicherten Anschauaufzeichnungen an den bekannten Zeitplan und an die eindeutige Identität aufweist, um die Teilnehmerreaktion auf ein bestimmtes Rundsendematerial festzustellen.

9. System nach Anspruch 8, **dadurch gekennzeichnet, dass** die Steuereinrichtung eine Einrichtung zum Überwachen der Zeitlänge der vorbestimmten Teilnehmeroperation enthält und konfiguriert ist, um eine Darstellung der Zeit als Information über die aktuelle Teilnehmerreaktion zu speichern.

10. System nach Anspruch 8 oder 9, **dadurch gekennzeichnet, dass** die Einrichtung zum Rundsenden eingerichtet ist, einen Datenteil mit einem Zeichen, das eine bestimmte Teilnehmerreaktion identifiziert, rundzusenden, und dass die Steuereinrichtung konfiguriert ist, um eine Anschauaufzeichnung mit dem Zeichen als Information über die aktuelle Teilnehmerreaktion zu speichern.

11. System nach Anspruch 9 oder 10, **dadurch gekennzeichnet, dass** die Einrichtung zum Rundsenden eingerichtet ist, um einen Datenteil mit einem Identitätscode rundzusenden, und dass die Steuereinrichtung konfiguriert ist, um eine Anschauaufzeichnung zu speichern, wenn ein neuer Identitätscode im Datenteil auftritt.

12. System nach Anspruch 11, **dadurch gekennzeichnet, dass** die Einrichtung zum Rundsenden eingerichtet ist, um einen Datenteil rundzusenden, wobei der gültigkeitsdefinierende Teil ein Zeichen im Identitätscode aufweist.

13. System nach Anspruch 11 oder 12, wenn er vom Anspruch 10 abhängt, **dadurch gekennzeichnet, dass** die Einrichtung zum Rundsenden eingerichtet ist, um einen Datenteil rundzusenden, wobei das Zeichen, das die bestimmte Teilnehmerreaktion identifiziert, ein Zeichen im Identitätscode aufweist.

14. System nach einem der Ansprüche 11 bis 13, wobei die Steuereinrichtung konfiguriert ist, um den Identitätscode periodisch zu prüfen.

15. System nach einem der Ansprüche 8 bis 14, **dadurch gekennzeichnet, dass** die Einrichtung zum Rundsenden eingerichtet ist, um den Datenteil rundzusenden, der gemäß einer Verschlüsselung verschlüsselt ist, die unterschiedlich von einer Codierung des Rundsendematerials ist.

Revendications

1. Procédé d'acquisition de données concernant une réponse de participant à un matériau de diffusion, chaque participant étant situé à un emplacement à distance distinct (54_1 à 54_n) et ayant une unité d'acquisition de données (1) avec une identité unique respective et comprenant des moyens de mémorisation et un dispositif actionnable manuellement (17), le procédé comprenant les étapes consistant à :

- transmettre aux emplacements de participants un matériau de diffusion comprenant une partie d'audience et une partie de données ;
- mémoriser un enregistrement d'écoute associé audit matériau de diffusion dans les moyens de mémorisation d'une unité d'acquisition de données conformément à un actionnement prédéterminé par le participant du dispositif actionnable manuellement en réponse à ladite partie d'audience dudit matériau de diffusion ;

caractérisé par le fait que :

- l'étape de transmission comprend la transmission d'un matériau de diffusion aux emplacements de participants conformément à un programme connu ;
- la partie de données contient une partie de définition de validité capable de définir une transmission valide ou non valide et l'unité d'acquisition de données comprend des moyens de contrôle de validité (7) pour contrôler ladite partie de définition de validité ;
- l'étape de mémorisation d'un enregistrement d'écoute comprend la mémorisation des date et heure de temps réel déduites du matériau de diffusion et la mémorisation des informations de la réponse de participant actuelle, pourvu que les moyens de contrôle de validité confirment la validité de ladite partie de définition de validité ; et
- la compatibilité desdits enregistrements d'écoute mémorisés avec ledit programme connu et avec ladite identité unique est testée afin de vérifier la réponse du participant à un matériau de diffusion particulier.

2. Procédé selon la revendication 1, **caractérisé par le fait que** la durée dudit actionnement prédéterminé par le participant est surveillée et **par le fait que** l'étape de mémorisation d'un enregistrement d'écoute comprend la mémorisation d'une représentation de ladite heure en tant qu'information de la réponse de participant actuelle.

3. Procédé selon l'une des revendications 1 ou 2, **caractérisé par le fait que** ladite partie de données comprend un caractère identifiant une réponse de participant particulière et **par le fait que** l'étape de mémorisation d'un enregistrement d'écoute comprend la mémorisation dudit caractère en tant qu'information de la réponse de participant actuelle.

4. Procédé selon l'une des revendications 2 ou 3, **caractérisé par le fait que** la partie de données comprend un code d'identité et **par le fait que** l'étape de mémorisation d'un enregistrement d'écoute se produit lorsqu'un nouveau code d'identité apparaît dans la partie de données.

5. Procédé selon la revendication 4, **caractérisé par le fait que** la partie de définition de validité com-

prend un caractère dans le code d'identité.

6. Procédé selon l'une des revendications 4 ou 5 telles que dépendantes de la revendication 3, **caractérisé par le fait que** le caractère identifiant la réponse de participant particulière comprend un caractère dans le code d' identité.

7. Procédé selon l'une quelconque des revendications précédentes, comprenant en outre le chiffrement de ladite partie de données selon un chiffrement différent d'un codage dudit matériau de diffusion.

8. Système d'acquisition de données pour acquérir des données concernant une réponse de participant à un matériau de diffusion, le système comprenant :

- des moyens pour diffuser aux participants un matériau de diffusion comprenant une partie d'audience et une partie de données ;
- une pluralité d'unités d'acquisition de données (1) prévues, en fonctionnement, à des emplacements de participants à distance distincts (54_1 à 54_n), dans lequel chacune desdites unités d'acquisition de données a une identité unique respective et comprend :
  - des moyens de mémorisation ;
  - un dispositif actionnable manuellement ; et
  - des moyens de commande pour mémoriser un enregistrement d'écoute associé audit matériau de diffusion dans les moyens de mémorisation conformément à un actionnement prédéterminé par le participant du dispositif actionnable manuellement en réponse à ladite partie d'audience dudit matériau de diffusion ;

et dans lequel le système comprend en outre :

- un contrôleur central comprenant :
  - des moyens pour mémoriser des données concernant les participants du système conformément à ladite identité unique ; et
  - des moyens pour lire l'identité unique et lesdits enregistrements d'écoute mémorisés sur des moyens de mémorisation d'unité d'acquisition de données respectifs ;

caractérisé par le fait que :

- lesdits moyens pour diffuser sont agencés pour diffuser une partie de données contenant une partie de définition de validité capable de définir une transmission valide ou non valide et pour diffuser le matériau de diffusion conformément à un programme connu ;
- l'unité d'acquisition de données comprend des moyens de contrôle de validité (7) pour contrôler ladite partie de définition de validité ;
- les moyens de commande sont configurés pour mémoriser un enregistrement d'écoute comprenant les date et heure de temps réel déduites du matériau de diffusion et pour mémoriser les informations de la réponse de participant actuelle, pourvu que les moyens de contrôle de validité confirment la validité de ladite partie de définition de validité ; et
- un contrôleur central comprend des moyens pour tester la compatibilité desdits enregistrements d'écoute mémorisés avec ledit programme connu et avec ladite identité unique pour vérifier la réponse du participant au matériau de diffusion particulier.

9. Système selon la revendication 8, **caractérisé par le fait que** les moyens de commandé comprennent des moyens pour surveiller la durée dudit actionnement prédéterminé par le participant et sont configurés pour mémoriser une représentation de ladite heure en tant qu' information de la réponse de participant actuelle.

10. Système selon l'une des revendications 8 ou 9, **caractérisé par le fait que** lesdits moyens pour diffuser sont agencés pour diffuser une partie de données comprenant un caractère identifiant une réponse de participant particulière et **par le fait que** les moyens de commande sont configurés pour mémoriser un enregistrement d'écoute comprenant ledit caractère en tant qu' information de la réponse de participant actuelle.

11. Système selon l'une des revendications 9 ou 10, **caractérisé par le fait que** lesdits moyens pour diffuser sont agencés pour diffuser une partie de données comprenant un code d'identité et **par le fait que** les moyens de commande sont configurés pour mémoriser un enregistrement d'écoute lorsqu'un nouveau code d'identité apparaît dans la partie de données.

12. Système selon la revendication 11, **caractérisé par le fait que** lesdits moyens pour diffuser sont agencés pour diffuser une partie de données dans laquelle la partie de définition de validité comprend un caractère dans le code d' identité.

13. Système selon l'une des revendications 11 ou 12 telle que dépendantes de la revendication 10, **caractérisé par le fait que** lesdits moyens pour diffuser sont agencés pour diffuser une partie de données dans laquelle le caractère identifiant la répon-

se de participant particulière comprend un caractère dans le code d'identité.

14. Système selon l'une quelconque des revendications 11 à 13, dans lequel lesdits moyens de commande sont configurés pour contrôler périodiquement le code d'identité.

15. Système selon l'une quelconque des revendications 8 à 14, **caractérisé par le fait que** lesdits moyens pour diffuser sont agencés pour diffuser ladite partie de données chiffrée selon un chiffrement différent d'un codage dudit matériau de diffusion.

FIG. 1

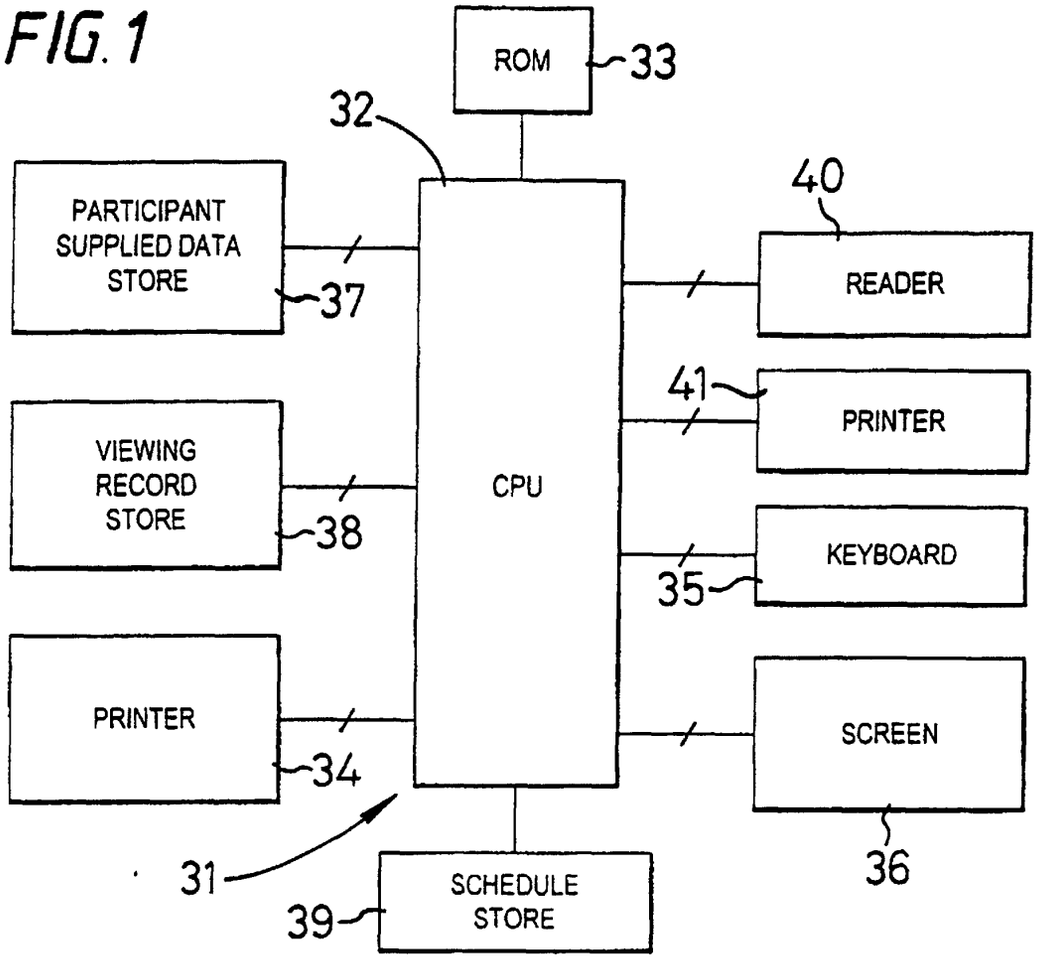

ROM
33
32
PARTICIPANT SUPPLIED DATA STORE
37
40
READER
41
PRINTER
VIEWING RECORD STORE
38
CPU
KEYBOARD
35
PRINTER
34
SCREEN
36
31
39
SCHEDULE STORE

FIG. 2

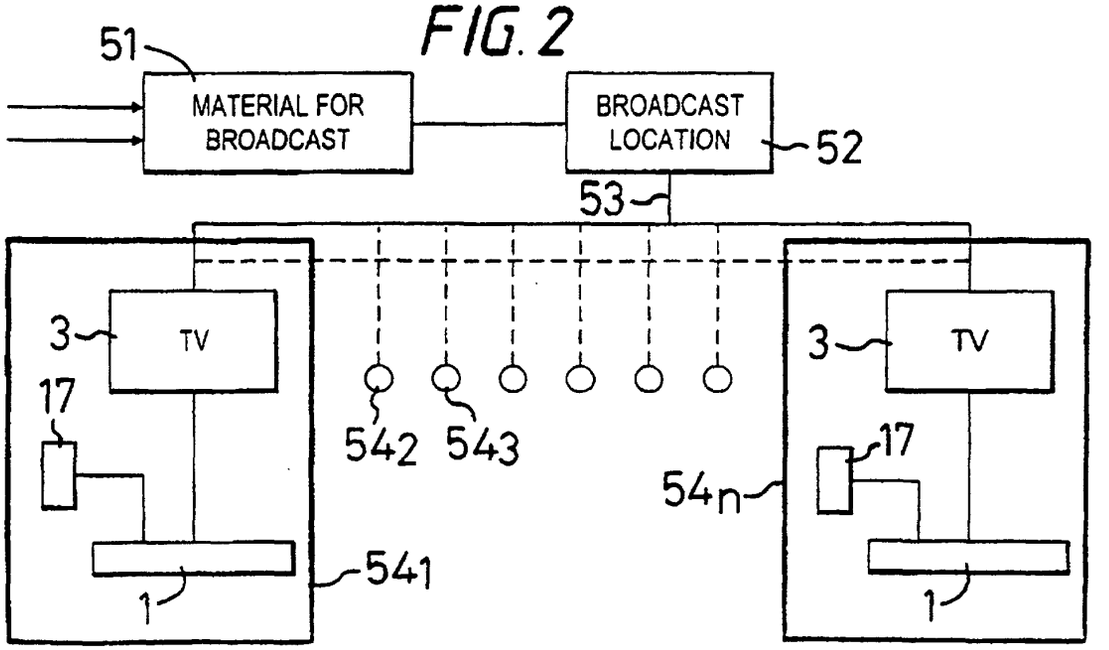

51
MATERIAL FOR BROADCAST
BROADCAST LOCATION
52
53
3
TV
17
542
543
54n
541
1

FIG.3

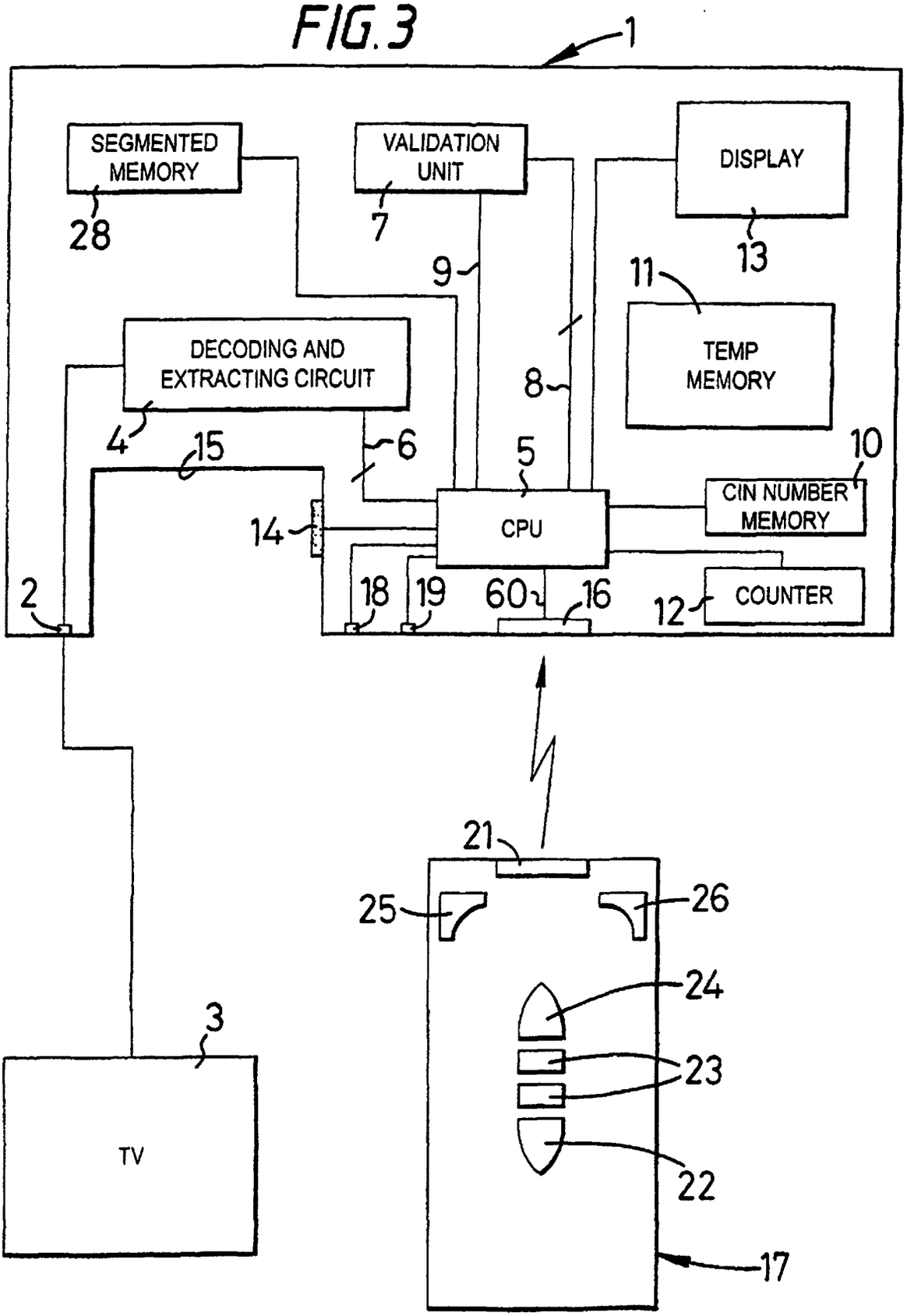
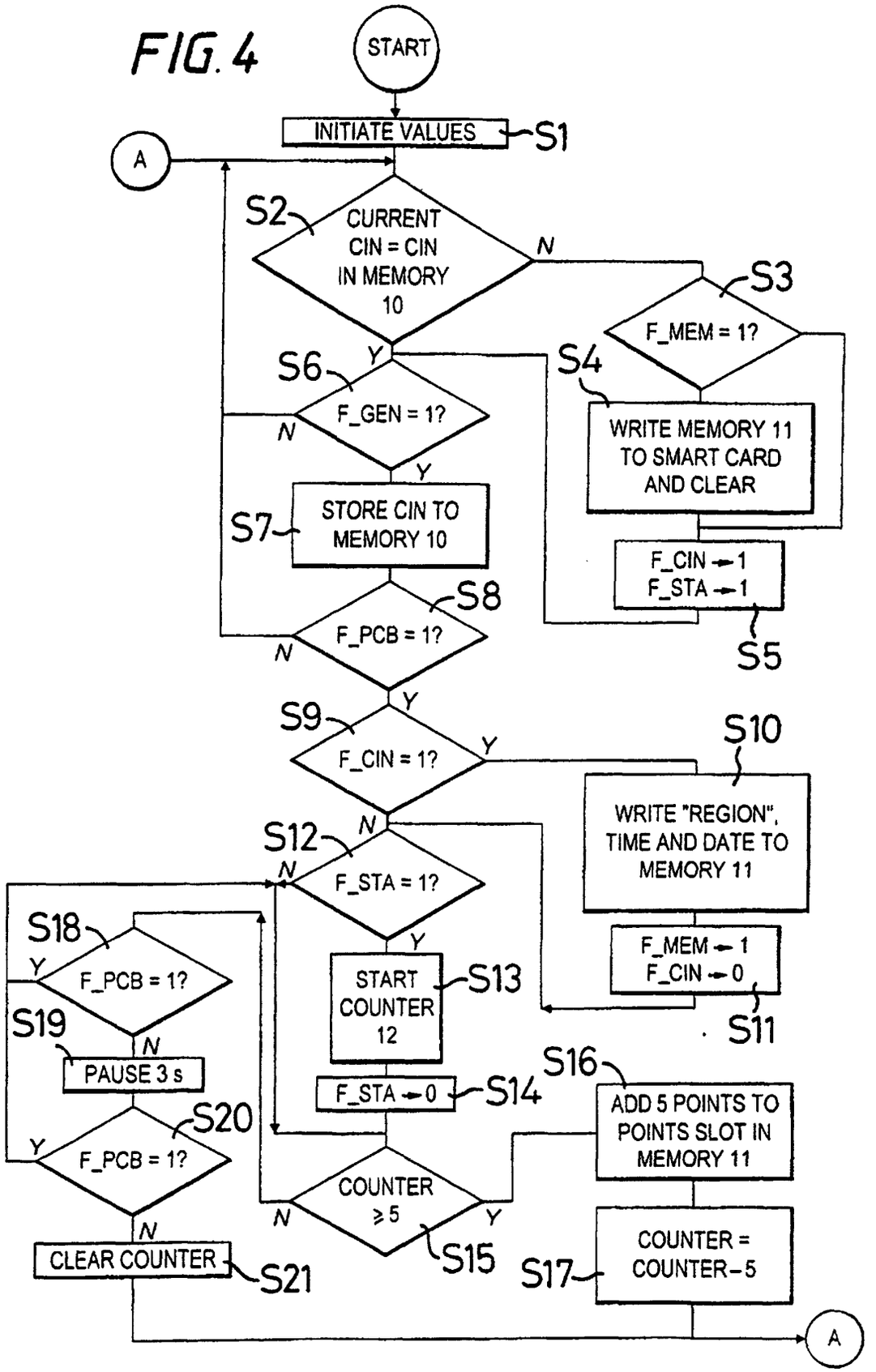

1
SEGMENTED MEMORY
28
VALIDATION UNIT
7
DISPLAY
13
9
11
TEMP MEMORY
DECODING AND EXTRACTING CIRCUIT
4
8
15
6
5
10
CIN NUMBER MEMORY
14
CPU
2
18
19
60
16
12
COUNTER
21
25
26
24
3
23
TV
22
17

FIG. 4


START
INITIATE VALUES
S1
A
S2
CURRENT CIN = CIN IN MEMORY 10
N
Y
S3
F_MEM = 1?
S4
WRITE MEMORY 11 TO SMART CARD AND CLEAR
F_CIN ← 1
F_STA ← 1
S5
S6
F_GEN = 1?
N
Y
S7
STORE CIN TO MEMORY 10
S8
F_PCB = 1?
N
Y
S9
F_CIN = 1?
Y
S10
WRITE "REGION", TIME AND DATE TO MEMORY 11
F_MEM ← 1
F_CIN ← 0
S11
N
S12
F_STA = 1?
N
Y
S13
START COUNTER 12
S14
F_STA ← 0
S15
COUNTER ≥ 5
N
Y
S16
ADD 5 POINTS TO POINTS SLOT IN MEMORY 11
S17
COUNTER = COUNTER−5
S18
F_PCB = 1?
Y
S19
PAUSE 3 s
N
S20
F_PCB = 1?
Y
N
CLEAR COUNTER
S21
A