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(54) Abstract Title: **Movable audience measurement system**

(57) An audience measurement system for producing audience information of a media presentation includes a moveable apparatus that picks up an audio signal (via a microphone 20) belonging to the media presentation, processes the audio signal in order to derive content identification information. The apparatus includes a user interface that allows panel members to indicate their presence in front of a media presenting device and to indicate the media session type, providing feedback to panel members about the presence information and the selected media session type (242). The content identification information, presence information and the media session type are stored and then downloaded to a docking station which sends the data to a remotely located central base for further processing for generating audience information.

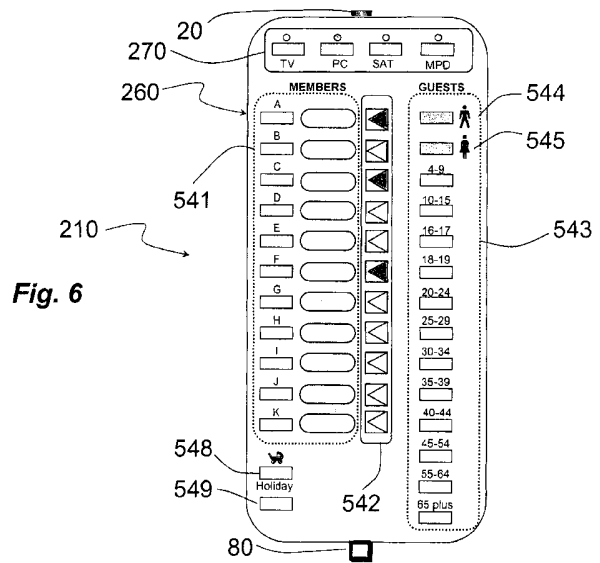


Fig. 6

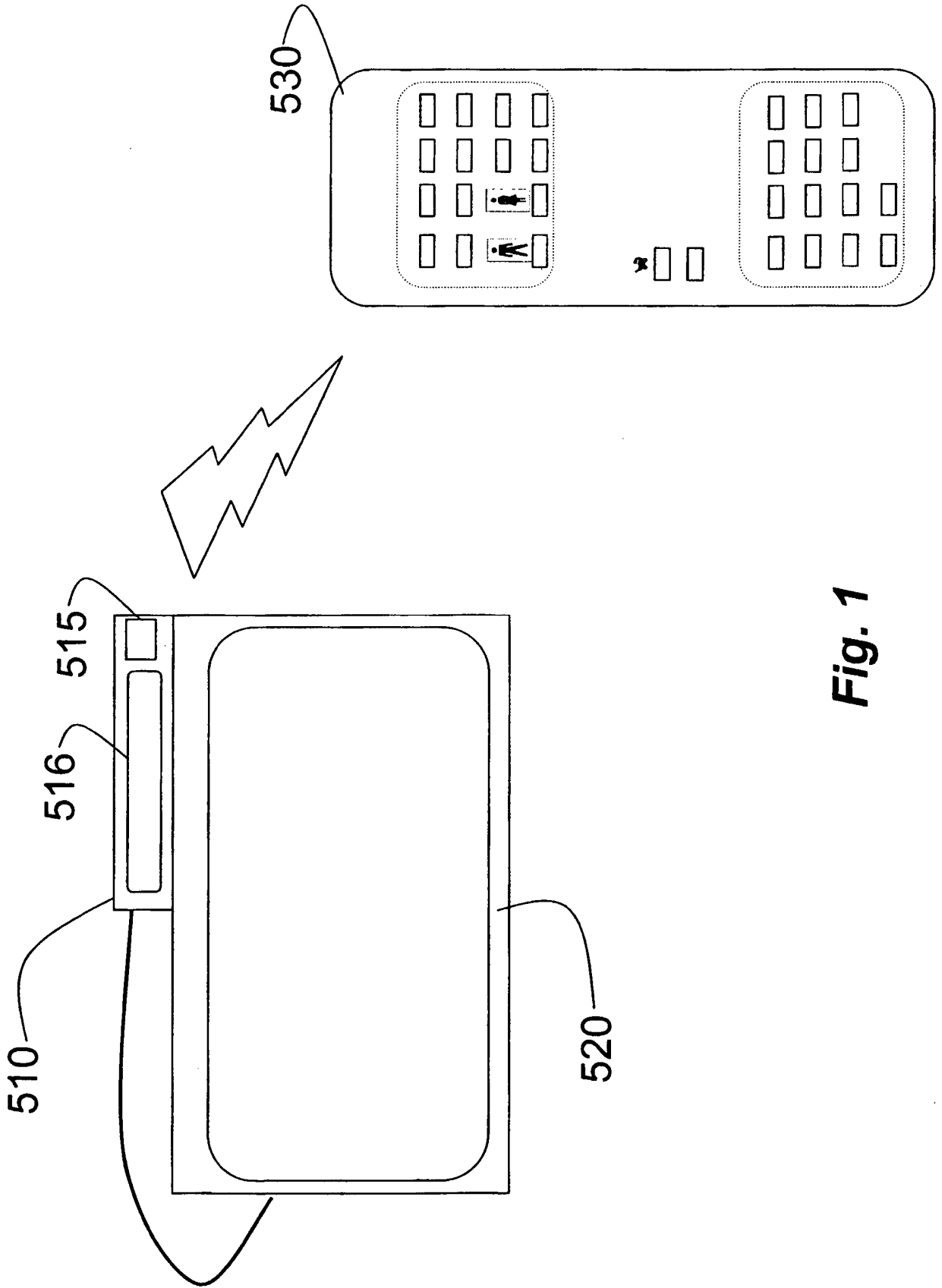


Fig. 1

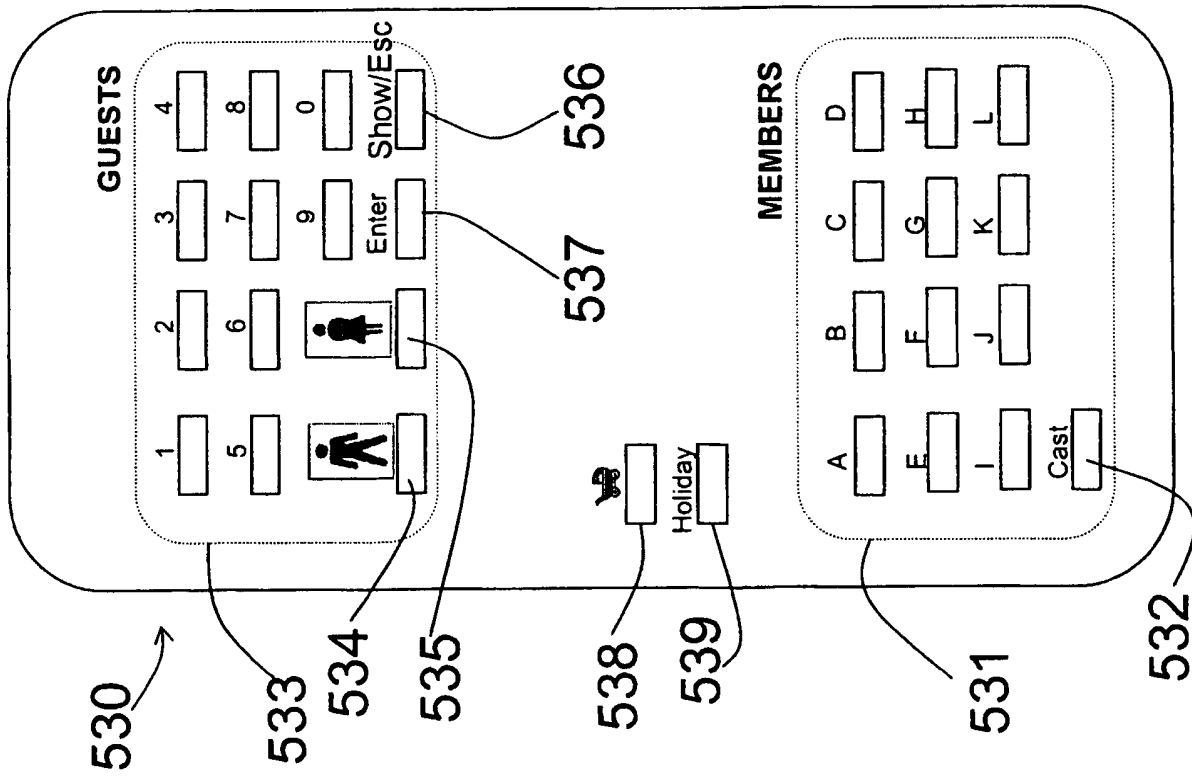


Fig. 2a

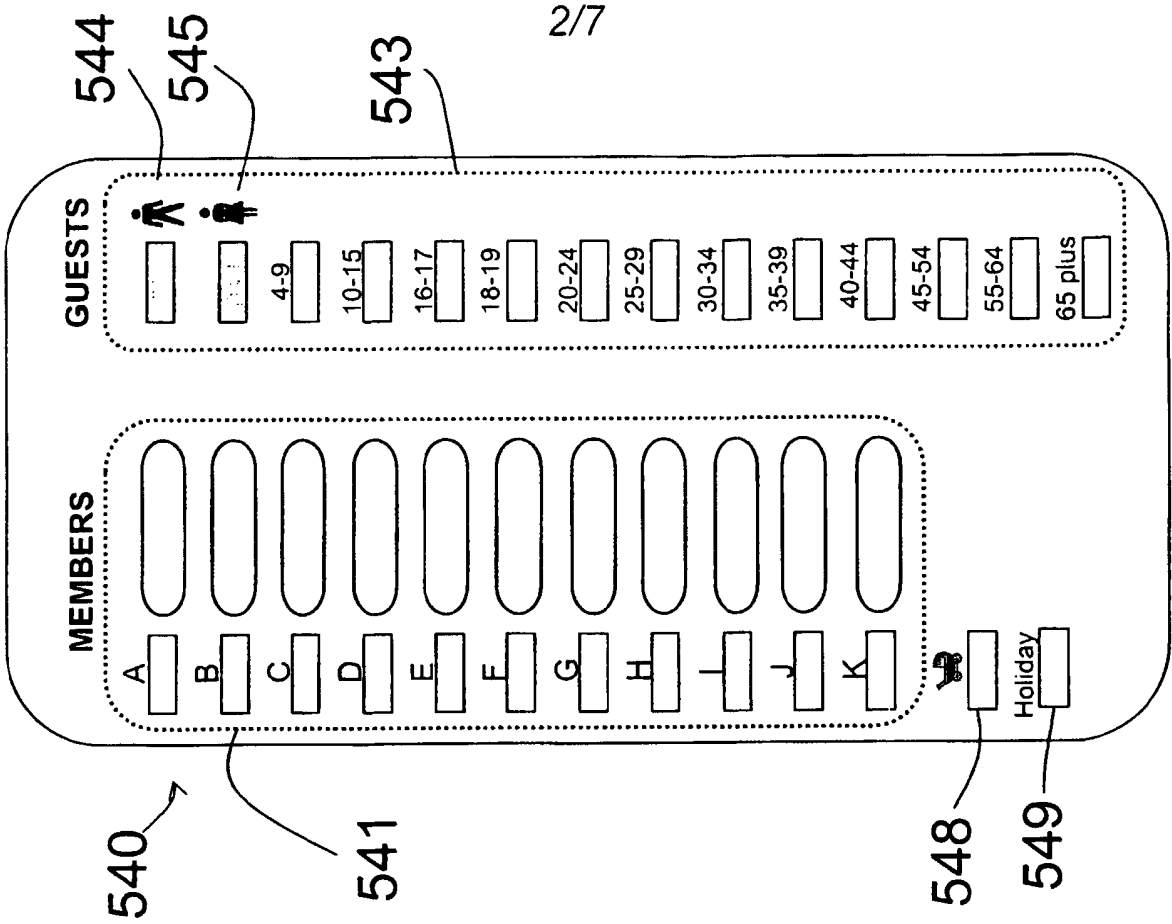


Fig. 2b

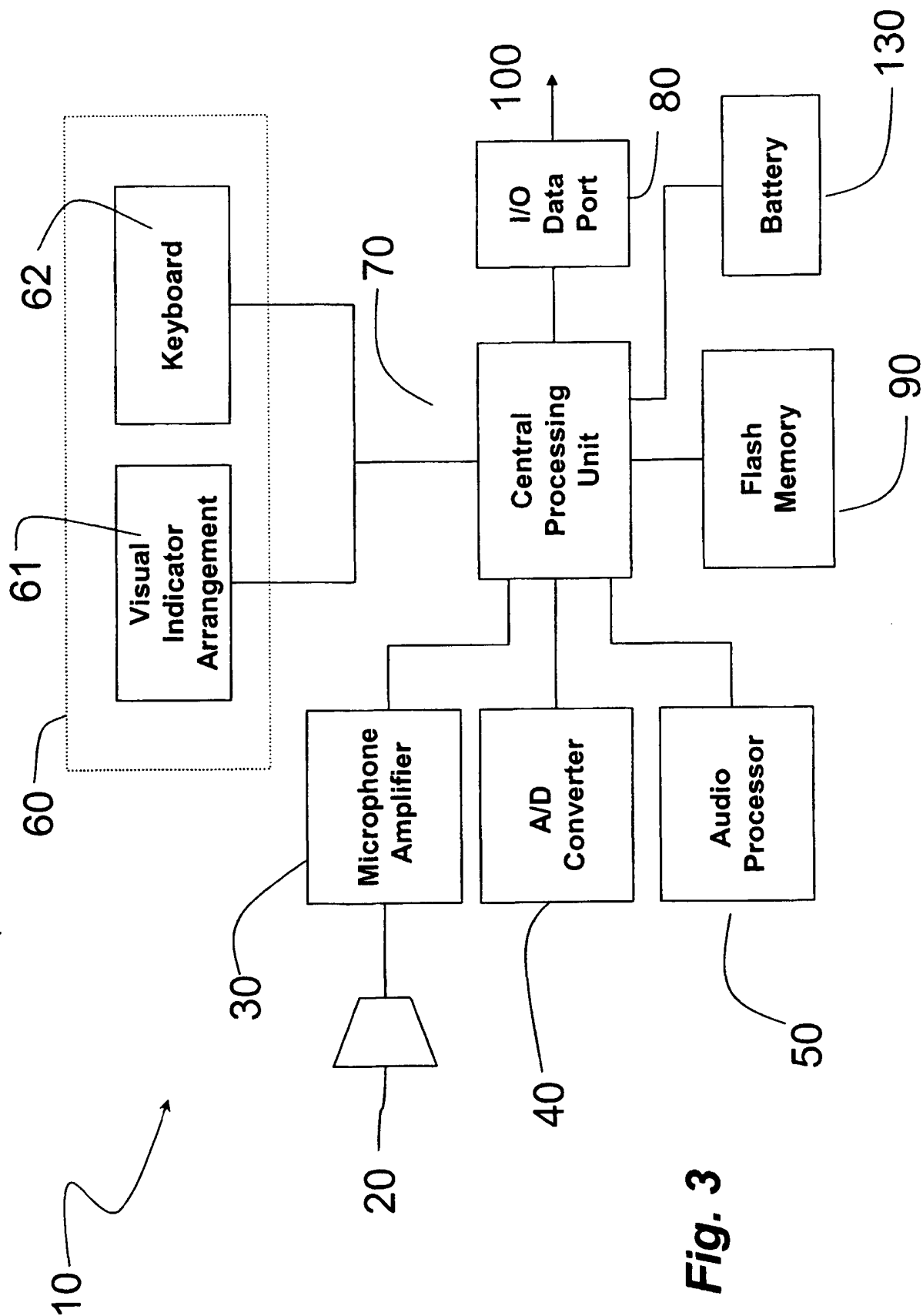


Fig. 3

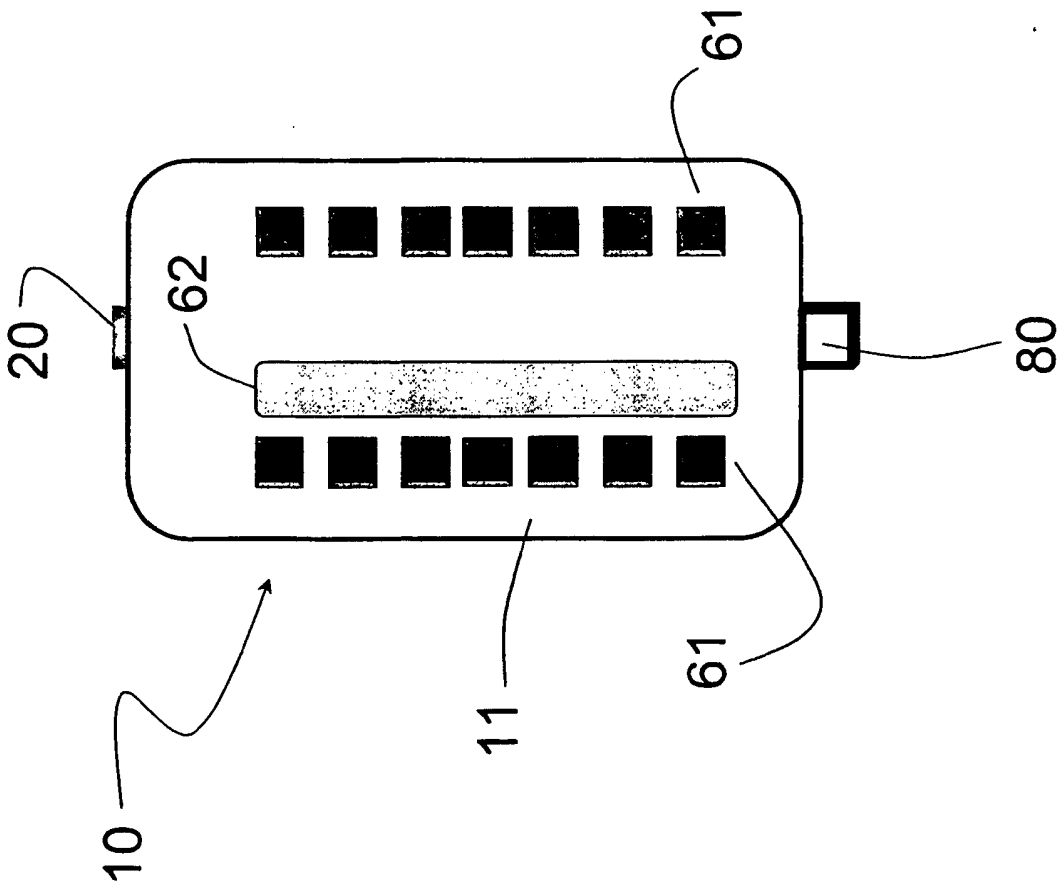


Fig. 4a

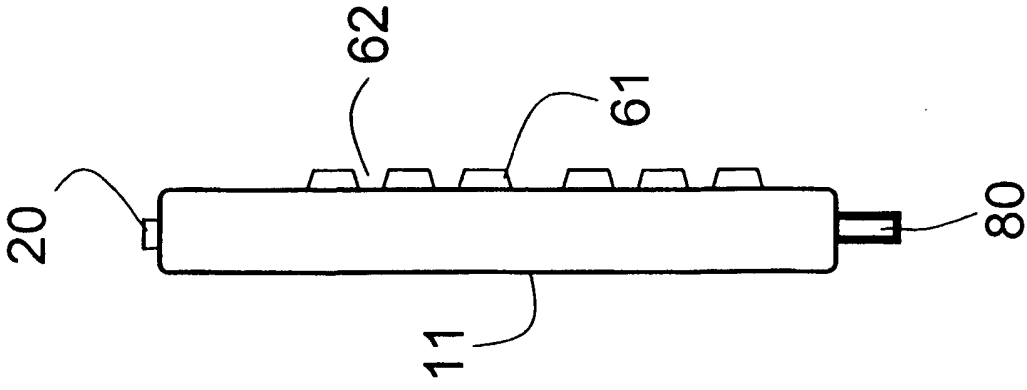


Fig. 4b

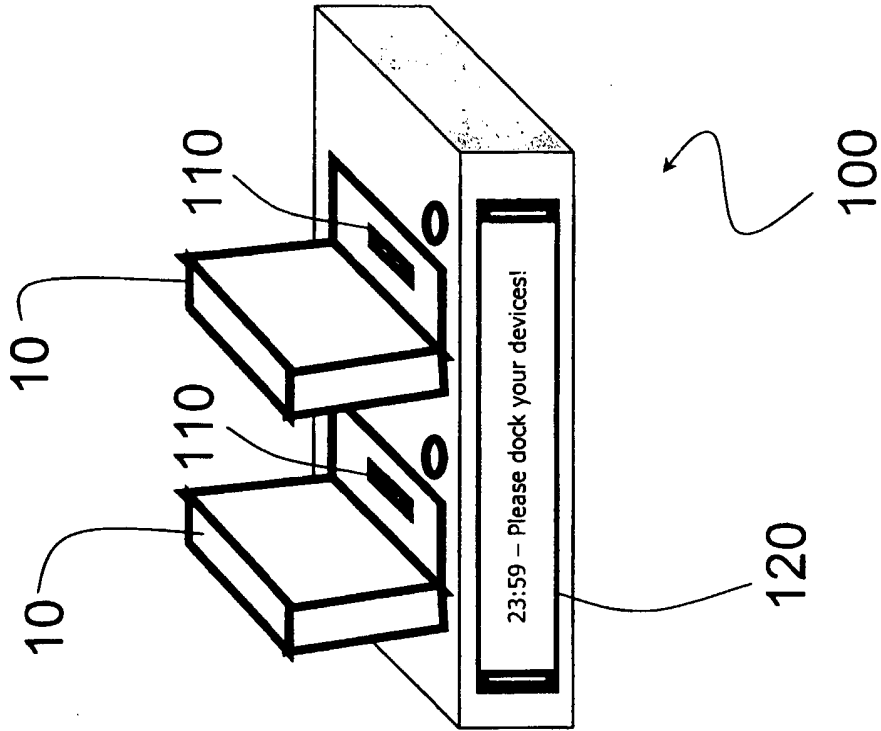


Fig. 5

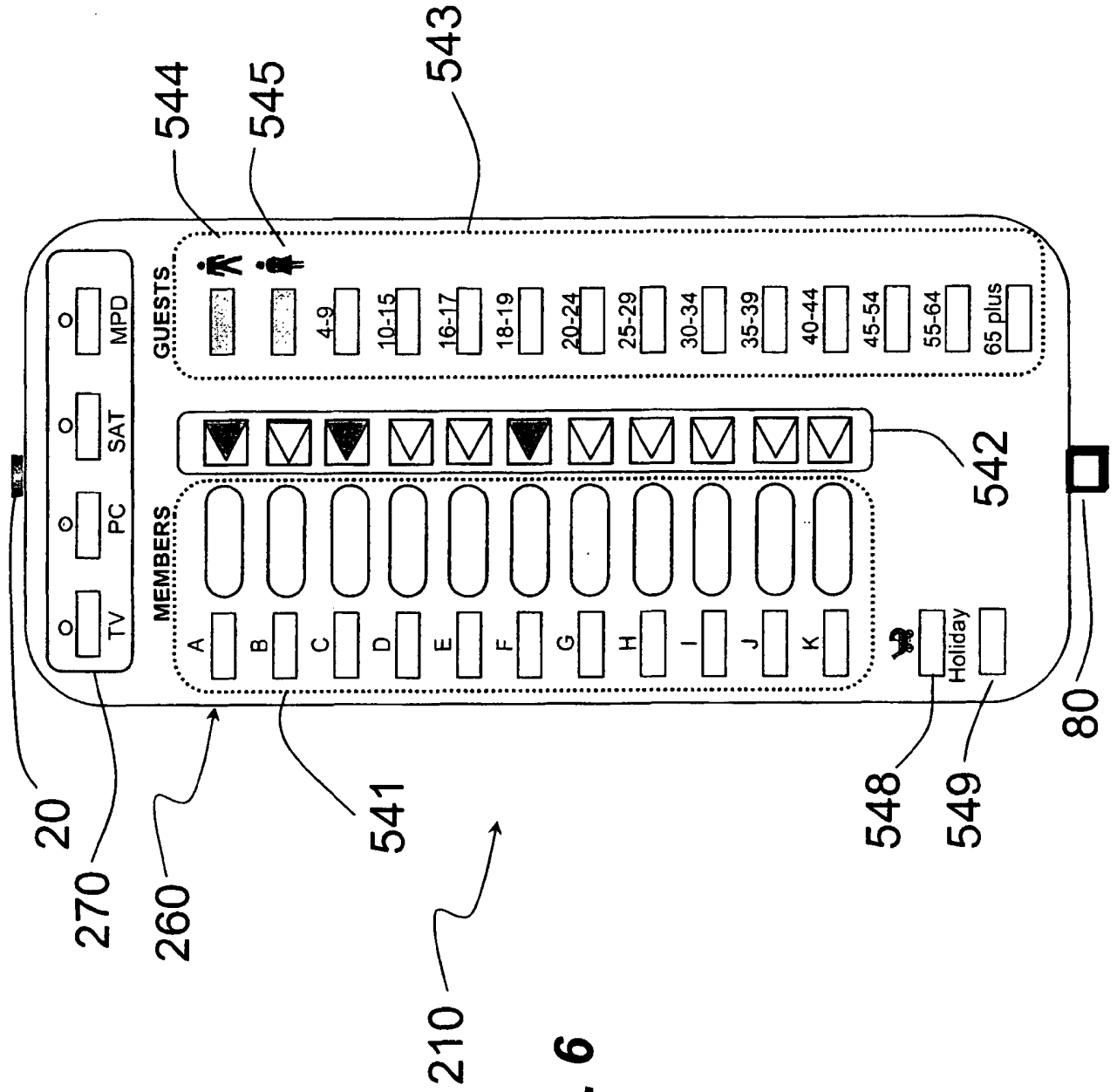


Fig. 6

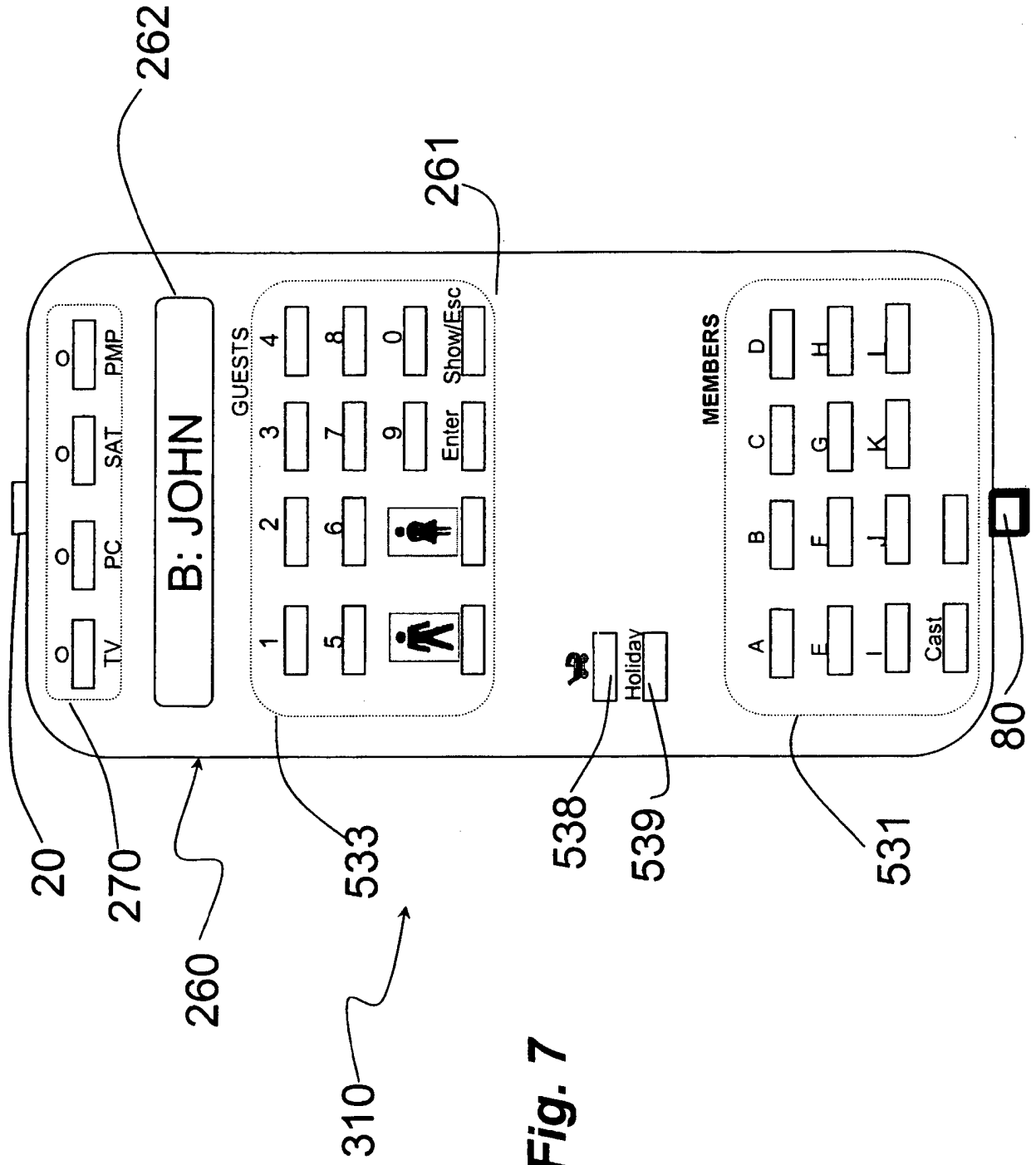


Fig. 7

**"Audience measurement apparatus, system and method
for producing audience information of a media
presentation"**

5 Field of the invention

10 The present invention relates to an audience
measurement apparatus, system and method used for
measuring the audience of a media presentation, for
example measuring audiences of programs broadcast by
television and radio which are watched, or listened to,
by means of different types of media apparatuses
available at a household.

15 The invention is applicable to all systems
suitable for offering media presentations similar to
those described in what follows.

Description of the related art

20 Apparatuses for measuring the audience of a media
presentation, such as a television or a radio program,
are well-known in the industry. Knowledge of the size
and composition of audiences to television or radio
broadcast associated to certain environments, for
25 example a home, is of paramount importance for the
whole broadcast industry in order to rate the
advertising space included in broadcasts.

30 Furthermore, knowledge of the demographical
composition of the viewing audience is critical for
advertisers to optimize the effectiveness of their
commercial messages by targeting the right groups for
their products.

35 In order to collect such information, usually a
plurality of media consumers is enlisted for
cooperating in an audience measurement survey for a
predefined length of time.

The group of viewers cooperating in the survey is called a "panel", while each viewer participating in the panel is called a "panel member". Audience metering apparatuses are then associated to the media rendering devices or display systems used by panel members for watching television broadcasts (hereinafter "media devices") at their respective viewing locations. Such metering apparatuses have two main goals: a) determining the content being shown on their associated media devices; and, b) registering the presence of one or more panel members so that the exposure to the content determined by the metering apparatuses can be accounted to produce audience data.

Audience metering apparatuses have traditionally been in the form of a set-top box placed on the media device (traditionally a TV set). In Figure 1 an example is given of a typical set-top box 510, operating as a metering apparatus that is wire connected to a TV set 520 under measurement for identification of the content being displayed there. An example of an audience metering system currently being used in many countries is given by the UNITAM system. The UNITAM system comprises a set-top box like metering device which includes several ports that allow the connection to various media devices associated to the TV set under measurement. The metering device is capable of detecting the port from which the signal on screen is being generated and derives audio signatures continuously from that said port as long as it remains active. The signatures generated by the metering device are later transmitted by modem to a remotely located central base, where they are processed in order to identify all content shown on the associated TV set.

In the case of the above mentioned UNITAM metering system, this function is achieved by means of a content

identification technology comprising a set of techniques and methods that can recognize an unknown segment of audio material among a plurality of reference segments generated from known audio streams.

5 Audio, received directly from the TV set, for example as an audio signal via the wire connection, is converted into "signatures" that characterize the audio material being analyzed. A pattern correlation engine is then used to identify an unknown piece of content by

10 scanning its signatures against a large set of previously-generated reference signatures. The content on display is then determined by analyzing correlation values according to appropriate algorithms in order to provide a wide range of media measurement and

15 monitoring services, of which the most widely used is "Broadcast Identification" (i.e. recognizing a channel being watched on a TV set).

The combination of the data generated by a set-top box meter and its associated remote control (concept

20 known as "people meter system") offers accurate and complete information about the viewing session in a cost-effective way. In this respect, an essential characteristic of this kind of audience metering apparatuses is that viewers identify themselves by

25 declaring their presence in front of the TV set 520, usually by pressing an identification key on a remote control 530 that is able to communicate with a decoder/receiver module 515 in the set-top box 510 to produce presence information. A graphic display 516 is

30 used to communicate different types of messages to the panel members, the most important one being the acknowledgement that the declaration procedure has been successfully completed.

An example of a remote control 530 currently being

35 used by AGB Nielsen Media Research in their television

audience measurement ("TAM") system is called "push-button people meter" measurement, or "active people meter" measurement and is detailed in Figure 2a. A typical user interface of a TAM people meter's remote control includes: a) keys associated to panel members, b) keys associated to eventual guests, and c) keys to input other type of information that indicates a relevant attribute of a viewing session (hereinafter "session attribute information"). An essential issue for the accuracy of TAM system is that a different key is univocally assigned to each panel member in order to facilitate the declaration process as much as possible. A second feature that critically contributes to the accuracy of the TAM system is that the remote control does not perform other functions unrelated to audience measurement, so that it is always available to register any change in the viewing session (i.e., people joining or leaving a viewing session, etc.). A third fundamental characteristic that notably influences the accuracy of the measurements is given by the layout of the keys and the ergonomics of the remote control, which have a significant impact in compliance levels.

In the example shown in Figure 2a, the remote control 530 includes a plurality of keys distributed on a layout comprising a first members' area 531, and a second guests' area 533. The first members' area 531 is positioned in the lower portion of the remote control 530, so that the keys identified by alphabetical letters are easily accessed by the thumb of the hand holding the remote control, allowing the panel members to promptly declare their presence by depressing their respective keys. Such members' keys are associated to the panel members during the setup of the system in the home. A 'cast' key 532 is provided for showing on a display of the set-top box 510 (see Figure 1) the names

of panel members and their respective associated keys in the member area 531. In the example, the second guests' area 533 is positioned in the upper portion of the remote control 530, and the keys identified by numbers are used to declare the number of guests and their age. Two 'gender' keys 534 and 535 are used to specify the gender of the guests. A further 'Enter key' 537 is intended for confirming storage of the guest data, while a 'Show/Esc' key 536 is a service key for performing different supplementary actions, such as alternate display of panel members and guests list, or deletion of wrong data concerning guests. Using this type of remote control guest entry, requires pressing four keys: one of the two gender keys, two number keys for the age (the range is 00-99) and the 'Enter' key.

In the example of Figure 2a, in the central portion of the remote control 530 there is a 'Holiday' key 539 used to indicate that the panel family will be away from home for a certain period, and a 'Baby' key 538 used to indicate that the TV is being watched only by children below the minimum age required to be considered a panel member.

Another example of a set-top box people meter's remote control is given in Figure 2b, which shows a remote control 540 used by the Broadcasters' Audience Research Board (BARB) in the United Kingdom. In this case, a first members' area 541 is located at the left of the remote control's user interface, and each member key is associated to a label indicating the panel member's name. A second guests' area 543 is located on the right of the user interface, and the presence of guests is declared through two keys: one of both gender keys 544 and 545, and the key corresponding to the age range to which the guest belongs. When compared to the example given in Figure 2a, the guest entry procedure

in this remote control is achieved in a faster and easier way (i.e., pressing two keys instead of four). In 1999, the introduction into the United Kingdom of a new meter handset designed with the purpose of providing a simplified guest entry procedure and the facility to enter up to 99 simultaneous guest viewers produced "both an increase in the number of households registering guest viewers and an increase in the level of guest viewing reported" (quoted from "Guest Viewing. Why and how it is collected and how it contributes to Total Viewing", document available at www.tns-global.com).

As can be seen from the examples shown in Figures 2a and 2b, the layout and the functions of the keys in the people meter's remote control are extremely important for the task of measuring audiences, since the homogeneity (or heterogeneity) of the declaration interface may have an impact on the overall measurements results. The cooperation of the panel, given the above-mentioned considerations, is a critical factor since from a methodological perspective there is no viewing unless panel members declare their presence. In the case of a typical set-top box meter 510 (see Figure 1), a key element that contributes to the effectiveness of the panel member's presence declaration procedure is the graphic display 516 included in the set-top box meter. One major function of the display is to provide feedback to the panel member about their status (i.e. present or absent). A second fundamental purpose of the display is to request the panel member to perform different tasks associated with the viewing session in some specific cases. For example, if the meter detects that the TV set is on, but no panel member has declared his/her presence, the graphic display can show a message asking who is

present, reminding the panel member to start the viewer
declaration procedure if he/she is actually present. In
the same way, if no activity is detected on the part of
the panel members after a certain amount of time, the
5 display may show a message asking to confirm the
presence of any panel member.

As already stated, a set-top box meter with an
associated remote control has proved to be a very
effective solution for measuring television audiences.
10 However, in recent years technology has evolved in a
dramatic way, offering new ways to be exposed to
various types of media. For example, computers are
being increasingly used for watching TV and listening
radio inside homes through Internet, in many cases
15 using a Wi-Fi link, which gives users the ability to do
so in different places within their homes or in their
vicinity. In addition, the increasingly lower prices of
conventional TV sets have increased the penetration of
these devices within households, many times being
20 installed or used in unusual locations. Furthermore,
technology nowadays provides different versions of
portable multimedia players, where programs can be
downloaded for rendition in a mobile location, like for
example the well-known iPod from Apple Computers. In
25 this new scenario, a set-top box audience metering
apparatus designed to be installed by being attached to
a TV set under measurement may not be appropriate or
applicable at all because it may be cumbersome and
inconvenient.

30 Moreover, given that the set-top boxes used for
metering usually need to be wired to all of the signal
sources associated to the TV set, such a type of
audience metering apparatus is often not compatible
with the use of 'LCD' or 'plasma' flat-screen TV sets
35 which are usually installed attached to a wall, since

there is not enough room or suitable place to install the metering apparatus, or the installation would be aesthetically annoying for panel members.

5 Recently, there has been development in the field of personal meters. A personal meter is usually a device that can be worn by a user and is equipped with a microphone capable of capturing the ambient sound to which the user is being exposed, so that it can potentially identify the audio track of a broadcast
10 program through an appropriate broadcast identification technique.

An example of a personal meter is the "Portable People Meter" or "PPM" currently offered by Arbitron Inc. in the United States and other countries. In a
15 panel using a personal audience meter, each panel member has to be equipped with his/her own device, which has to be worn by panel members in order to capture any content to which they may be exposed during the entire day. The personal audience meters are
20 sometimes perceived as an attractive solution because of the fact that they do not require installation and are therefore able, in principle, to capture mobile viewing situations (provided that users agree to carry the device with them during most of the day).

25 However, several drawbacks with personal devices have been noticed in the last few years as a result of personal devices being tested in different situations. One example is given by the tests conducted on various personal meters by the Radio Joint Audience Research
30 (RAJAR) in the United Kingdom during 2004, which were made public in February 2005. The results of the tests cast some doubts about the accuracy of the viewing data generated by the use of such personal devices. Among the drawbacks, one of the most apparent is that
35 personal meters are burdensome for panel members, since

they have to be worn during the whole time members are awake (i.e. from dawn till they go to sleep at night). This inevitably induces a negative attitude among panel members that tends to reduce cooperation, and therefore
5 reduce viewing levels, whilst at the same time increasing drop-out rates (i.e., panel members terminating their cooperation agreements), all of which has a significant impact on operating costs and data quality.

10 Another important drawback of personal meters is that, in order to determine exposure to content being shown on TV devices, personal meters rely on the proximity of the person wearing the meter to those devices. This implies a drastic change in the
15 definition of "viewing", since it overrides the direct concept of voluntary user declaration, replacing it with an indirect method based on recognition of certain specific content by an electronic device. It has not been proved that such a method accurately reflects when
20 a panel member is in a viewing situation, since the method is heavily dependent on a number of variables, whilst only some of the variables are related to spatial proximity. For example, the physical posture of the person at any given time may be critical to the
25 device's capability of recognizing the content being shown on the TV device, since it could alter the acoustic path between a TV device's speaker and the meter's microphone, sometimes attenuating the sound level arriving at the personal meter, thereby making
30 content recognition impossible.

Moreover, the recognition effectiveness of a personal meter can be influenced by several possible disturbances which may be affected by environmental variables, potentially modifying the overall audience
35 values. For example, an acoustic phenomenon like

reverberation can significantly alter a personal meter's performance (in terms of content recognition), since it tends to scramble the original signal with unwanted copies of it, carrying various delays with respect to each other. Since reverberation levels are heavily dependent on weather conditions (e.g. temperature, pressure, humidity, etc.), all of these variables can potentially alter the average audience levels obtained by these devices.

10 Given the above-mentioned inconveniences, personal people meters can only really be considered a solution suitable for measurement of out-of-home viewing, where there are currently no technical or economically feasible alternatives. However, in view of the above-mentioned inconveniences, personal people meters are not appropriate for measuring in-home viewing situations, which require more rigorous measuring methods in order to achieve higher levels of accuracy.

15 There is, therefore, a need for an audience measurement system that is capable of producing audience information of a media presentation distributed through a plurality of media rendering devices located at different places within a home environment and that is not burdened by the mentioned limitations of fixed people meters or personal people meters.

Summary of the invention

30 It is a main object of the present invention to provide an audience measurement system for producing audience information of media presentations (mainly television and audio broadcasting, but not only) that can cover exposure to content that happens inside a home using one or more metering devices that can be

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moved to different locations within a home (i.e. metering devices that are not fixed).

It is still another object of the present invention to provide an apparatus and method having the
5 features set forth above, that requires minimum setup effort, if any, while still providing more accurate data than a personal meter.

It is still another object of the present invention to provide an apparatus and method having the
10 features set forth above, that does not significantly increase the burden imposed to panel members (in terms of cooperation).

It is still another object of the present invention to provide an apparatus and method able to
15 measure audience in association with different media rendering devices (as, for example, television sets, radio sets, personal computers, portable multimedia players, amongst the most usual) in different locations within a home environment.

It is another object of the present invention to
20 provide an apparatus and method having the features set forth above and whose measuring accuracy does not depend on the body posture of the panel member and is not critically affected by the environmental
25 conditions.

It is still another object of the present invention to provide an apparatus and method having the
30 features set forth above that substantially preserves the accepted definition of "viewing" within the industry, so that it has the capability of producing audience data that can be seamlessly combined with data produced by set-top box metering systems.

A preferred embodiment of the present invention
35 includes a moveable apparatus having substantially the shape, size and keyboard layout of a typical remote

control used in a conventional set-top box people meter, said moveable apparatus further including an arrangement of visual indicators for realizing essential user interface features of conventional set-top box people meters, plus an audio pickup and suitable electronic processing means for content identification. In the system of the present invention, the apparatus is complemented with a docking station where said apparatus can be docked periodically for the purpose of recharging a battery and for downloading data that has been captured by the apparatus during the measurement process and subsequently transferring the data to a remotely located processing centre for producing audience information.

15 An audience measurement system comprising the apparatus of the present invention is capable of realizing the objects set forth above providing several advantages with respect to prior art systems.

Because it does not need to be connected to the measured media rendering device, the apparatus of the present invention is capable of capturing viewing through moveable media rendering devices used within an environment as well as media rendering devices otherwise not measurable by fixed meters, yet providing substantially the same type of audience information currently obtained from fixed people meter systems. Since the presence of panel members is registered by declaration in the same way as conventional people meters, there is no change in the definition of viewing from a methodological standpoint, which is of paramount importance in order to maximize the compatibility of the viewing data produced by the system of the invention with that of existing audience measurement systems currently in use in dozens of panels around the world.

A main advantage of the present invention is that, by being an apparatus which is moveable but which is not required to be worn by panel members, it implies no substantial change in the level of cooperation from
5 panel members to realize the survey having regard to today's set-top box meters.

The system of the present invention is more efficient than systems based on personal devices when measuring audiences in closed environments, since the
10 apparatus can be shared among several panel members as opposed to requiring one separate device for each one of them. Furthermore, the audio reception of the apparatus of the present invention can be expected to be more accurate than that of personal devices, since
15 the apparatus is intended to be placed in proximity of the measured media rendering device, which makes the audio reception less prone to disturbance from noise and acoustic distortions, whilst at the same time being completely independent of the position of the viewer or
20 listener.

It must be also noticed that, contrary to personal meter solutions that tend to burden panel members by requiring them to wear the device during the whole day, the system of the present invention does not imply any
25 substantial change in the way panel members are ought to cooperate with the survey, except for the additional requirement of docking the moveable apparatus with a certain periodicity.

Moreover, since the apparatus is a dedicated
30 device (i.e., the apparatus is not intended to perform other functions beyond those related to audience measurement), it eliminates the possibility (and therefore any potential associated interference) of panel members executing alternative functions that

could interrupt or distort the audience measurement process.

In an enhanced embodiment of the apparatus of the system of the present invention, said keyboard further
5 includes an additional set of keys for entering additional information about a viewing session being measured through it (i.e., session attribute information).

In a preferred embodiment of the apparatus of the
10 present invention, said additional set of keys are used to specify what type of media rendering device is being measured so that a single apparatus can be used to measure a plurality of media rendering devices within a given environment, providing a clear benefit in terms
15 of efficiency.

Brief description of the annexed drawings

The invention will now be described, by way of
20 example only, by referring to the enclosed drawings, wherein:

- Figure 1 is a diagram of a set-top box metering device according to the prior art;
- Figures 2a and 2b are diagrams of remote
25 controls currently used with the set-top box meter of Figure 1;
- Figure 3 is a block diagram of an apparatus according to the invention;
- Figures 4a and 4b are two views of the apparatus
30 according to the invention;
- Figure 5 is a perspective view of a complementary module for the apparatus according to the invention;
- Figure 6 is a diagram of one embodiment of the
35 apparatus according to the invention; and

- Figure 7 is a diagram of an alternative embodiment of the apparatus according to the invention.

Detailed description of the invention

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Figure 3 shows a block diagram of an apparatus for measuring audience of a media presentation according to the invention, indicated as a whole by reference number 10.

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Such apparatus 10 includes, represented by a block identified by reference number 20, a microphone suitable for detecting the audio portion of a media presentation. Such a microphone 20 is connected in cascade to a microphone amplifier 30 and to a subsequent analog-to-digital converter 40 that carries out a digitalization of the audio part of the media presentation prior an audio processing block 50. Such an audio processing block 50 derives content identification information from the sample of audio recording captured by the microphone 20. Such content identification information, associated with corresponding time stamps, is stored and further transmitted to a remote processing location to contribute in the production of audience information.

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The content identification technology to be used could be, for example, the one currently used by the UNITAM people meter mentioned above, among other approaches available for the measurement of television and radio audiences.

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The content identification information is then supplied to a Central Processing Unit 70 that is equipped with a Flash Memory 90 for storing it together with other related data like the presence information as declared by panel members. The Central Processing Unit is equipped also with an input/output data port

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80, comprising a USB (Universal Serial Bus) connector that allows connection for exchanging data with a docking station 100 that is shown in Figure 5.

5 The apparatus 10 is included in a housing 11 having the shape and size of a palmar device, that can be moved around within different locations in a home environment (i.e. the device is shaped and dimensioned so as to be portable), or, if the case, also in other outdoor areas within the home. The apparatus 10 is
10 powered by means of a battery 130.

The apparatus 10 includes also a User Interface 60 that comprises a keyboard 62 and a visual indicator arrangement 61.

15 Such keyboard 62 and visual indicator arrangement 61 can be better observed in Figure 4a, where a schematic front view of the apparatus 10 is shown.

The keyboard 62 is readily accessible to the panel member for declaring his/her presence in front of the media rendering device being measured, and the visual
20 indicator arrangement 61 provides signalling means to feedback information about the presence of the members.

It must be noted that although for clarity purposes the keyboard 62 is represented in Figure 4a in a very simplified manner, as well as the housing 11,
25 such housing and the layout of the keys corresponds substantially to the housing and the layout functionality of the prior art remote controls 530 and 540 shown with reference to Figures 1, 2a and 2b. In this way, the advantage given by the homogeneity among
30 the different remote controls is exploited based on panel cooperation hypotheses strongly dependent on such layout.

The apparatus 10 for measuring audience of a media presentation operates as follows.

Panel members are asked to place the moveable apparatus 10 in the proximity of the measured media rendering device (TV set, radio set, PC, portable multimedia player or others) and, as it is the case for the prior set-top box metering systems, panel members are required to declare their presence through keyboard 61. The apparatus 10 through the microphone 20 picks up the audio part of the media content being rendered by the measured device and derives content identification information out of it through blocks 30, 40, and 50, storing it in the memory 90 for later downloading to the docking station 100, shown in Figure 5.

Such docking station 100 includes a plurality of slots 110 in which the apparatuses 100 can be inserted and connected through connectors compatible with the USB connector to circuitry suitable for forwarding the information stored in memory 90 to a remotely located central processing base. Such a circuitry, not shown in Figure 3, may include a radio transmitter or alternatively utilise a link with an available communication network, either wired or wireless. A message display 120 is also provided on the docking station 100 in order to alert the panel members to perform the required tasks, for instance by visualizing a message like "23:59 - Please dock your devices!". Panel members are indeed asked to place their moveable apparatus 10 in the docking station 100 every night before going to sleep (or 2 AM, whichever comes first) for downloading of the stored information and for recharging of the battery 130.

One embodiment of an apparatus according to the invention is shown in Figure 6, indicated as a whole by the reference 210.

Such apparatus 210 includes same or analogous modules with respect to that previously indicated in

the block diagram of Figure 3, including a User Interface 260 comprising a layout of keys analogous to that of the remote control 540 shown in Figure 2b. Therefore, the apparatus 210 includes the panel members' area 541, the guests' area 543, the 'Holiday' key 539 and the 'Baby' key 538, already described above. The apparatus 210 comprises a visual indication arrangement 542 including Liquid Cristal Displays (LCDs) which fits in the keyboard layout and is used to provide feedback to the panel members, clearly indicating what panel members are present at the viewing session. In an alternative embodiment of the present invention, the apparatus 210 provides feedback to the panel members by means of light emitting diodes (LEDs) that signal through an on/off status indication the presence/absence of the corresponding panel member.

The User Interface 261 includes a further keys area: a session attribute area 270 that comprises a plurality of keys for entering session related information, as for example declaring the type of media rendering device under measurement. The session attribute area 270 shown in the embodiment of Figure 6 includes a key for declaring an audience in front of a TV set (indicated as "TV" in Figure 6), a key for declaring audience in front of a personal computer (indicated as "PC" in Figure 6), a key for declaring audience in front of programs which are broadcast via satellite (indicated as "SAT" in Figure 6) and a key for declaring audience in front of a portable multimedia player device (indicated as "PMP" in Figure 6) such as an Ipod.

The addition of the session attribute area 270 allows panel members to declare additional important information that regards the media device being viewed or listened, with a minimal change in the User

Interface of the system. Furthermore, the session attribute area 270 enhances the portability of the apparatus 210, increasing the number of media rendering devices that can be measured through it. The number of
5 keys of the session attribute area 270 is not restricted to four so that it may vary according to the amount of different media presentation devices to be measured, and the feedback to the panel member may be provided through any type of visual indication items,
10 such as LEDs, LCDs, back-lit keys, amongst others.

In the embodiment shown in Figure 6, the visual indicator arrangement 542 shows that panel members associated with keys A, C and F are present in a PC media session. Such a function of indicating who is
15 present in front of a specific media rendering device was already present in conventional set-top box metering apparatuses, and it is advantageously transferred to the moveable apparatus 210.

The apparatus 210 further includes a microphone
20 20, visible in Figure 6, plus the microphone amplifier 30, the analog-to-digital converter 40 and the audio processing block 50, not shown there. The apparatus 210 includes also the Central Processing Unit 70, the Flash Memory 90, and the battery 130 (not shown in the
25 figure), while the input/output data port 80 is visible in the lower portion of the apparatus 210. In an alternative embodiment, an audio input port may be added to the apparatus so that an audio signal may be fed to the apparatus 210 by means of a direct
30 connection to an audio output port of the media rendering device under measurement.

A second embodiment of the apparatus according to the present invention is shown in Figure 7. Such apparatus 310 includes analogous modules with respect
35 to that previously indicated in the block diagram of

Figure 3, including a User Interface 260 comprising a layout of keys analogous to that of the remote control 530 shown in Figure 2a. Therefore, the apparatus 210 includes the members' area 531, the guests' area 533, the 'Holiday' key 539 and the 'Baby' key 538, already
5 described above. The apparatus 310 comprises a visual indicator arrangement including a graphic display 262 that fits in the layout of the keys, used to provide feedback to the panel members, clearly indicating if
10 their presence has been registered. What regards such graphic display 262, it must be noted that preferably such display substantially replicates the images and messages usually displayed by set-top box meters, requiring therefore a minimal adaptation effort by
15 panel members already cooperating in a survey. In the example shown in Figure 6, the display 262 shows that key "B" in the members' area 531 corresponds to the panel member named "JOHN". Such a function, as explained, is already present in some set-top box
20 metering devices, and it is advantageously transferred to the apparatus 210.

The User Interface 261 also includes a session attribute area 270 that comprises a plurality of keys devoted to the declaration of the audience rendering
25 device under measurement, each of them associated to a visual indication of its corresponding on/off status.

The apparatus 310 includes a microphone 20, visible in Figure 6, plus a microphone amplifier 30, an analog-to-digital converter 40 and an audio processing
30 block 50, not shown there. The apparatus 210 includes as well a Central Processing Unit 70, a Flash Memory 90 and a battery 130 (not shown), while input/output data port 80 is visible in the lower portion of the apparatus 310.

Without prejudice to the underlying principle of the invention, the details and embodiments may vary significantly, with respect to what has been described and shown by way of example only, without departing
5 from the scope of the invention as defined by the annexed claims.

It will be apparent to those skilled in the art that the term media presentations as used in the context of this document can represent television or
10 radio programs broadcast via a variety of communication means, including cable networks, satellite networks, Internet, fiber optic cables, etc., as well as other types of suitable means to transmit audio and video programs to potential consumers.

15

CLAIMS

1. A moveable apparatus (10) for capturing content identification information and presence information
5 declared by one or more panel members, including:
audio capturing means for picking up audio from a media presentation distributed to an audience through one or more media rendering devices to produce an audio signal;
10 processing means (70) for processing said audio signal to derive said content identification information;
user interface means (60) for entering said presence information of panel members;
15 memory means (90) to store said content identification information and said presence information; and
communication means for transmitting said content identification information and said presence information for further processing to generate
20 audience information.
2. An apparatus (10) according to claim 1, wherein said user interface means (60) includes:
a keyboard (62) for entering said presence
25 information of panel members; and
one or more feedback signaling means for providing feedback to said panel members about said presence information.
3. An apparatus (10) according to claim 2, wherein
30 said keyboard (62) includes a first set of member keys (531).
4. An apparatus (10) according to claim 2 or claim 3, characterized in that said keyboard (62) includes a second set of guest keys (533).

5. An apparatus (10) according to any one of claims 2 to 4, characterized in that said keyboard (62) includes keys for entering gender information.

6. An apparatus (10) according to any one of
5 claims 2 to 5, characterized in that said keyboard (62) includes keys for entering age information.

7. An apparatus (10) according to any one of
10 claims 2 to 6, characterized in that said keyboard (62) further includes keys for entering session attribute information.

8. An apparatus (10) according to any one of claims 2 to 7, characterized in that said feedback signalling means comprises a visual indicator arrangement (61).

15 9. An apparatus (10) according to claim 8, characterized in that said visual indicator arrangement (61) displays a plurality of visible items, wherein each one of said visible items is exclusively assigned to a distinct panel member.

20 10. An apparatus (10) according to claim 8 or claim 9, characterized in that said visual indicator arrangement (61) includes a plurality of light emitting devices.

25 11. An apparatus (10) according to claim 8 or claim 9, characterized in that said visual indicator arrangement (61) includes a graphic display.

12. An apparatus (10) according to any one of the preceding claims, characterized in that said audio capturing means includes a microphone (20).

30 13. An apparatus (10) according to any one of the preceding claims, characterized in that said communication means includes a data port for exchanging data with a host device.

14. An apparatus (10) according to any one of the preceding claims, characterized in that it is included in a palmar device.

5 15. An audience measurement system for producing audience information of a media presentation distributed to an audience through a plurality of media rendering devices, said measurement system including the apparatus (10) of any one of the preceding claims.

10 16. A system according to claim 15, further comprising a host device for exchanging data via said communication means.

17. A system according to claim 16, characterized in that said host device is a docking station.

15 18. A system according to any one of claims 15 to 17, characterized in that said media presentation is a television program.

19. A system according to any one of claims 15 to 17, characterized in that said media presentation is a radio program.

20 20. A method for producing audience information to a media presentation by means of one or more media presentation devices, said audience information being captured through a moveable apparatus (10), said method comprising the steps of:

25 placing said moveable apparatus (10) in proximity of one of said media presentation devices to pick up audio from said media presentation;

generating at said moveable apparatus (10) an audio signal from said picked-up audio;

30 processing said audio signal to extract content identification information from said audio signal;

capturing presence information of one or more panel members;

transmitting said content identification information and said presence information to a host system; and,

5 processing said content identification information and said presence information to generate said audience information.

21. A method according to claim 20, further comprising the step of providing feedback about said presence information to said plurality of panel
10 members.

22. A method according to claim 21, characterized in that feedback about said presence information is provided by means of an arrangement (61) of visual indicators included in said moveable apparatus (10).

15 23. A method according to claim 22, characterized in that each one of said visual indicators provides feedback about at least one panel member.

24. A method according to claim 22 or claim 23, characterized in that said visual indicators are
20 realized through a graphic display.

25 25. A method according to any one of claims 20 to 24, characterized in that said capturing presence information is performed by declaration by means of a keyboard layout included in said moveable apparatus (10).

26. A method according to claim 25, characterized in that said panel members perform said declaration by activating a distinct respective key.

30 27. A method according to any one of claims 20 to 26, further comprising the step of entering session attribute information.

28. A method according to claim 27, characterized in that said session attribute information is entered by activating a set of session attribute keys.

29. A method according to claim 27 or claim 28, characterized in that said session attribute information includes information about a type of media presentation device.

5 30. A method according to any one of claims 20 to 29, characterized in that said processing of said audio signal includes deriving signatures from said audio signal.

10 31. A method according to any one of claims 20 to 30, characterized in that said processing of said audio signal includes deriving identification codes previously inserted in said audio signal.

15 32. A moveable apparatus (10) for capturing content identification information and presence information declared by one or more panel members, including:

an audio capturing element adapted to pick up audio from a media presentation distributed to an audience through one or more media rendering devices to produce an audio signal;

20 a processor connected to said audio capturing element and configured to process said audio signal to derive said content identification information;

25 a user interface (60) in communication with the processor and adapted for entry of said presence information of panel members;

30 a memory (90) connected to the processor and configured to store said content identification information and said presence information; and

35 a communication element connected to said processor and adapted to transmit said content identification information and said presence information for further processing to generate audience information.

33. A moveable apparatus, substantially as hereinbefore described with reference to the accompanying drawings.

5 34. A method for producing audience information to a media presentation by means of one or more media presentation devices, substantially as hereinbefore described with reference to the accompanying drawings.

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Claims searched: 1-32

Date of search: 5 April 2007

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A	-	US 2004/0122679 A1 (NEUHAUSER) see eg paragraphs 18, 61, 62 & 66
A	-	WO 98/10539 A2 (NEISEN MEDIA RESEARCH INC) see eg page 14, 13 et seq and page 27, 18 et seq

Categories:

X Document indicating lack of novelty or inventive step	A Document indicating technological background and/or state of the art.
Y Document indicating lack of inventive step if combined with one or more other documents of same category.	P Document published on or after the declared priority date but before the filing date of this invention.
& Member of the same patent family	E Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X:

G4H

Worldwide search of patent documents classified in the following areas of the IPC

H04H

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC

International Classification:

Sub Class	Sub Group	Valid From
H04H	0009/00	01/01/2006