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(54) **Display apparatus**

(57) The invention relates to a display apparatus (1) comprising at least one flat display panel (2) and a support housing (3) adapted to accommodate said flat display panel (2). The display apparatus (1) is adapted to slide out at least a portion (4;4';4'') of said flat display panel (2) from said support housing (3) for display of image information. The support housing (3) comprises

at least one electronic module (12;13;14) for displaying said image information on said flat display panel (2). Accordingly the invention provides for a display apparatus (1) that allows to optimise electronic and furniture requirements in an integrated approach. The invention also relates to an identification system and a remote control for use in such an identification system.

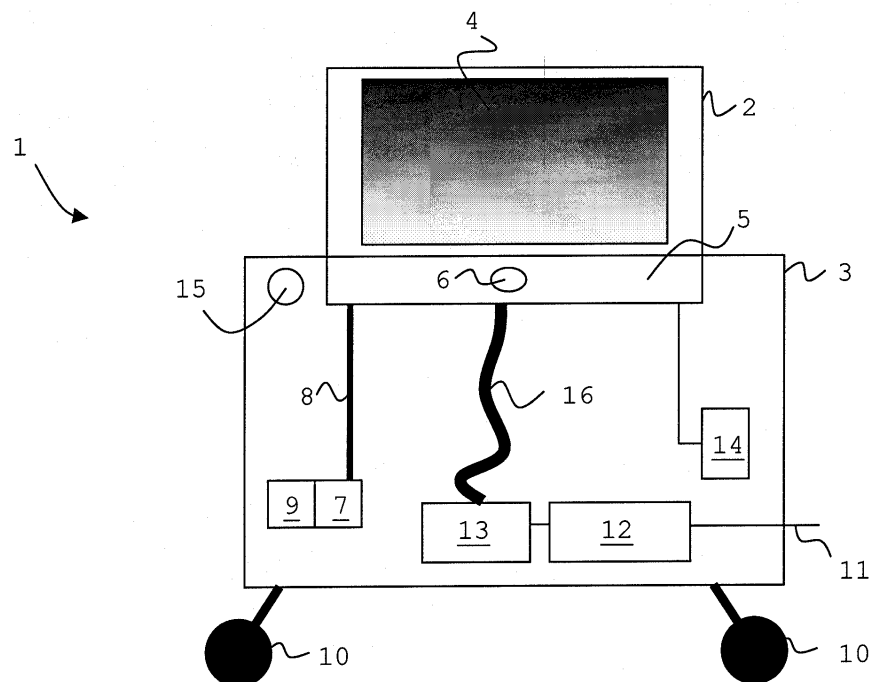


FIG. 1

Description

[0001] The invention relates to a display apparatus, in particular a television apparatus.

[0002] Nowadays most people possess one or more televisions. However, the presence of a television apparatus in a room, such as a living room, is often found to be in disharmony with the interior of the room, especially for large television apparatus.

[0003] In the art, television manufacturers have hired top-designers to adapt the shape of a television apparatus to fit the television apparatus with the interior of the room or to the personal taste of consumers. A disadvantage of such an approach is that a particular unconventional shape for a television apparatus will in general only be acknowledged by a relatively small group of consumers.

[0004] Alternatively, furniture manufacturers have provided furniture adapted to hide the television apparatus when not in use. US 6,494,150 discloses an elevating apparatus for a large flat television display that is movable in height through action of a motor so as to elevate the display to a desired height for its use, as well as to lower the display to a position where the display is concealed when not in use. This approach however is construction driven, i.e. dictated by the requirements as established by furniture manufacturers, and thus less flexible with respect to the electronic requirements for the television apparatus.

[0005] It is an object of the invention to provide an improved display apparatus.

[0006] This object is achieved by providing a display apparatus comprising at least one flat display panel and a support housing adapted to accommodate said flat display panel, wherein said display apparatus is adapted to slide out at least a portion of said flat display panel from said support housing for display of image information and said support housing comprises at least one electronic module for displaying said image information on said flat display panel.

[0007] Accordingly the invention provides for a display apparatus that allows to optimise electronic and furniture requirements in an integrated approach. By employing a flat display panel and sliding this display panel in and out of the support housing, a large display panel can be combined with a relatively small support housing. The electronic module may e.g. comprise a power supply for the flat display panel, a video card and/or a tuner. In general the electronic module may comprise a processing module for processing image signals, said processing including tuning to these image signals and converting the image signals into signals suitable for the flat display panel.

[0008] Flat display panels, such as thin film transistor (TFT) display panels, employ low voltage differential signalling (LVDS) to display image information. Low voltage differential signalling (LVDS) is less susceptible to noise, has a reduced power consumption and allows

faster switching rates than transistor-transistor logic (TTL) signals. In an embodiment of the invention the support housing comprises a TTL-to-LVDS converter and a cable is provided to transmit LVDS signals from said converter to said flat display panel. TTL video signals are converted to LVDS signals that are provided serially to the flat display panel over the cable. The converter preferably is a software application on e.g. a video card. The cable thus can have a length appropriate to follow the flat panel display during the sliding motion in and out of the support housing. Accordingly, a universal interface is provided in the display apparatus enabling interchangeable display panels that may slide out the support housing.

[0009] In an embodiment of the invention the support housing comprises a motor, or other electronic means, to slide out the flat display panel electronically. This embodiment provides for a customer-friendly display apparatus, wherein the lifting of the flat display panel may e.g. be initiated via a remote control instructing the motor to slide out the flat display panel from the support housing. Alternatively, an incoming activation signal and/or image signal may trigger the display panel to slide out. In an embodiment of the invention the display panel is switched on during the sliding out process of the display panel, and the display apparatus is arranged to adapt the size of the image to the visible part of the display panel.

[0010] In an embodiment of the invention, an electronic module in the display apparatus is adapted to process image information for said display panel such that a full image is displayed on said portion. Accordingly the display panel can display several formats or modes, such as ticker-tape, 4:3, 5:3 and 16:9.

[0011] In an embodiment of the invention, the display apparatus comprises a detector for detecting activation signals and said display apparatus is adapted to slide out said flat display panel on detection of said activation signals. Accordingly, the display apparatus may be in a stand-by mode and be activated if an activation signal, such as a request for a video conference, is received.

[0012] In an embodiment of the invention, the flat display panel comprises a non-display portion with a built-in camera. Such a built-in camera may e.g. be used for video conferences. Market surveys have shown, however, that most people feel uncomfortable when a camera is present without actually being used. Accordingly, the display apparatus provides for a solution wherein the camera is in a non-display portion of the flat display panel, such that, by sliding the non-display portion of the display panel into the support housing, the camera can be hidden in the support housing when not in use, while the display portion of the flat display panel is out of the support housing allowing the display panel to display image information.

[0013] In an embodiment of the invention the display apparatus, preferably the support housing, comprises a remote control input. This input can be used for control-

ling the position of the display panel, i.e. the extent to which it is slid out of the support housing, by providing suitable instructions to the motor. Further the remote control can be used to operate service menus displayed on the flat display panel, controlling the information displayed on the display panel, controlling the audio volume and other conventional tasks for remote control of television sets. In an advanced embodiment of the invention, the display apparatus is supported by wheels to move the apparatus, and the remote control may control this movement of the display apparatus.

[0014] In an embodiment of the invention, the support housing defines a volume and said flat display panel occupies said volume to an extent in the range of 20-50%, such as 30%. Accordingly, a large percentage of the room provided by the support housing is accommodated by the display panel, such that a small display apparatus is obtained, while sufficient space remains available to accommodate the electronic driving means for the flat display panel.

[0015] In an embodiment of the invention, the support housing comprises a metallic enclosure. Accordingly, adequate electromagnetic shielding performance (EMC) is obtained. Since such a metallic enclosure might be in disharmony with the interior of a consumers living room or a meeting room, preferably the support housing is adapted to fixate one or more covers. These covers can be adjusted in appearance to the taste of a consumer. The covers preferably are cloth covers, such that speakers can be provided in the support housing. Preferably the covers can be removed from the support housing to allow a change of the cover. The support housing may further include one or more light emitting elements, such that the display apparatus can be used as a lamp.

[0016] In an embodiment of the invention, the support housing comprises an opening for sliding out said flat display panel, said opening having sweeping means adapted, in use, to clean said flat display panel on sliding out. Such sweeping means, such as a brush or an O-ring at least partly surrounding the opening, sweeps along the display panel when it slides out of the support housing and consequently removes dust or other dirty spots from the panel. Alternatively or in addition other cleaning means may be provided that operate during sliding out of the display panel.

[0017] It should be appreciated that the previous embodiments or aspects of the previous embodiments of the invention can be combined. Moreover, the invention also relates to the individual aspects described above. In particular the invention also relates to the subject-matter defined in claims 8-15 for the support housing as such.

[0018] The invention also relates to a display apparatus comprising at least one flat display panel and a support housing adapted to accommodate said flat display panel, wherein said display apparatus is adapted to slide out at least a portion of said flat display panel from

said support housing for display of image information and said support housing further comprises wheels for moving said display apparatus and/or comprises a metallic enclosure. As the display apparatus is suitable to combine a large display panel with a small cabinet, it can be easily stored in a small place by moving it by employing the wheels. The metallic enclosure improves the EMC-performance of the display apparatus.

[0019] The invention further relates to an identification system, a remote control and an identification device.

[0020] WO 98/20678 discloses a multiple user profile remote control for controlling access to television programming. The remote control device contains program control data which limits the viewer's access to television programming. The remote control device is assigned one or more user ids for creating, maintaining and activating a user-customisable profile which controls programming access according to the users' preferences. The program control data, user profile data, and related circuitry is stored in the remote control device, or alternatively in the television receiver or a control device attached to the television receiver. Where the circuitry is not in the remote control devices, the remote control device has a unique identifying signal which causes the programming control circuitry to employ the program control data and user profile data associated with that particular remote control device.

[0021] It is an object to improve the identification system from the prior art.

[0022] This object is achieved by providing an identification system for controlling access rights to a display apparatus, said display apparatus being adapted to communicate with a remote control device for controlling said display apparatus, wherein said remote control device comprises an interface to receive an identification code from a further identification device. Such a mobile further identification device provides optimal flexibility in use.

[0023] The invention will be further illustrated with reference to the attached drawings, which show preferred embodiments according to the invention. It will be understood that the invention is not in any way restricted to these specific and preferred embodiments.

[0024] In the drawings:

Fig. 1 shows a conceptual illustration of a display apparatus according to an embodiment of the invention;

Figs. 2A-2D show three-dimensional representations and illustrative cross-sections of a display apparatus according to an embodiment of the invention;

Figs. 3A-3F show several modes of operation for the display apparatus according to an embodiment of the invention, and

Fig. 4 shows an identification system according to an embodiment of the invention.

[0025] Fig. 1 shows a conceptual illustration of a display apparatus 1 that comprises a flat display panel 2 and a support housing 3.

[0026] The flat display panel 2 preferably comprises a liquid crystal display (LCD), but may also be a plasma display panel (PDP) or a display panel comprising light emitting diodes, such as an OLED-panel. The LCD-panel 2 comprises a display portion 4 and a non-display portion 5. The non-display portion 5 comprises a built-in camera 6 for e.g. video-conferences or to be used as a web-cam for internet tasks.

[0027] The support housing 3 comprises a motor 7 and lift means 8, such as a rod or screw spindle, for sliding out the LCD-panel 2 from the support housing 3. The motor 7 is controlled by a control unit 9. The support housing comprises wheels 10 for moving the display apparatus 1.

[0028] The support housing 3 further has an input 11 for receiving image signals to be displayed on the display portion 4 of the LCD-panel 2. The image signals are received by electronic means or an electronic module 12, such as a tuner. The tuner communicates with a video card 13 that is able to generate LVDS signals for the LCD-panel 2, e.g. by converting TTL-signals into LVDS-signals. The LVDS signals allow for a cable 16 to have adequate length to follow the sliding motion of the LCD-panel 2. Further, the support housing 3 comprises a power supply 14 as a further electronic module for displaying image information on the LCD-panel 2. Finally the support housing 3 has a remote control input 15 that allows remote communication with the display apparatus 1 by a remote control (not shown in Fig. 1).

[0029] The module 12 may also comprise a detector for detecting activation signals upon which receipt the flat display panel 2 slides out of the support housing 3. Such an activation signal may either be an activation signal from a remote control, a television signal or another signal, e.g. a request signal for a video conference or an internet session.

[0030] Figs. 2A and 2B show three-dimensional representations of a display apparatus 1 according to an embodiment of the invention. In Fig. 2A an inside view is provided, whereas Fig. 2B shows an external view of an assembled display apparatus 1. Features identical or similar to that of Fig. 1 are assigned identical reference numbers.

[0031] Figs. 2A and 2B show the LCD panel 2 that is slid out of the support housing 3. As an indication of the dimensions of the display apparatus 1, the height of the support housing 3, including the wheels 10, is approximately 60 centimetres, while the depth is 20-25 centimetres. If the flat display panel 2 is slid out entirely of the support housing 3 the total height of the display apparatus 1 is about 110 centimetres. The width of the display apparatus 1 is approximately 1 metre.

[0032] The LCD panel 2 comprises a display controller 20 and mounting means 21 to hold the display portion 4 and the display controller 20 in a frame 22. The frame

22 comprises a tube or hollow shaft 23 that cooperates with the screw spindle 8 to lift the LCD panel 2 out of the support housing 3 and to retract the LCD panel 2 into the support housing 3. Fig. 2C shows a schematic illustration in cross-section for an embodiment of the sliding mechanism. The screw spindle 8 cooperates with a bolt 24 fixated in the lower part of the hollow shaft 23. Accordingly, upward and downward motion of the LCD-panel 2 can be achieved by rotating the screw spindle 8. Further a centring structure 25 is provided to hold the screw spindle 8 in position when the LCD panel 2 is slid into the support housing 3 and accordingly, the screw spindle penetrates the hollow shaft 23.

[0033] It has been found that in the slid out position of the LCD panel 2 a chimney effect is obtained, i.e. forced convection of air from the inside of the support housing 3 along the LCD panel 2, which is advantageous for cooling of the LCD panel 2. This effect is schematically illustrated in Fig. 2D, wherein the arrows A indicate the airflow. As the side of the frame 22 at the support housing 3 is open, the heat generated by the electronics in the support housing 3 provides for this airflow. The frame 22 is constructed such that it can be attached to the display portion 4, resulting in a space for airflow between the display portion 4 and a glass plate 26 and behind the display portion 4 and leaving a vent 27 for the air. Accordingly, the air is vented at the back side of the LCD-panel 2.

[0034] In Fig. 2A the support housing 3 is shown with a metallic enclosure 31, e.g. aluminium, while in Fig. 2B the enclosure 31 has covers 32 attached to the metallic enclosure 31. The metallic enclosure 31 comprises a rigid bottom plate 33 to support the motor 7, a motor control 9, a tuner 12 and video card 13 and a power supply 14. The cable 16 has been omitted for clarity purposes. Further holding members 35 are attached to the bottom plate 33 to rotatably receive the wheels 10. The holding members 35 may be rotatably mounted with respect to the bottom plate 33 as well. The bottom plate 33 is attached to or is integrally formed with the side walls of the metallic enclosure 31. The metallic nature of the enclosure 31 substantially avoids electromagnetic interference of the electric components or modules in the support housing 33. The metallic enclosure 31 may comprise of a sheet metal plate folded to obtain the enclosure 31. In the metallic enclosure 31, guiding rails 36 are provided to guide the LCD-panel 2 in and out of the support housing 3.

[0035] Also, speakers 37 and an audio amplifier 38 are provided in the support housing 3. The speakers 37 are arranged under a certain angle to provide an improved stereo effect.

[0036] The covers 32, shown in Fig. 2B, can be illustrated and/or adjusted to the taste of the owner. E.g. a company logo 39 can be provided. The covers 32 may be transparent to enable the display apparatus 1 to function as a lamp by one or more light emitting elements 40 provided on the metallic enclosure 31.

[0037] Dependent on the height of the support housing 3 above the floor surface as provided by the wheels 10 and/or the holding members 35, one or more auxiliary housings (not shown) can be provided underneath the bottom plate 33 to store additional apparatus, such as a video recorder and/or a DVD player/recorder. Consequently, the metallic enclosure 31 may need openings to contact this additional apparatus.

[0038] The support housing 3 comprises an opening for sliding out the LCD panel 2. The opening has cleaning means, such as sweeping means 41, adapted, in use, to clean the LCD panel 2 on sliding out. Such sweeping means 41, such as a brush or an O-ring, at least partly surround the opening, to sweep along the LCD panel 2, or at least the display portion 4, when it slides out of the support housing 3 and consequently removes dust or other dirty spots from the panel 2.

[0039] Figs. 3A-3F show several modes of operation for the display apparatus 1 according to an embodiment of the invention.

[0040] Fig. 3A shows the display apparatus 1 with the LCD-panel 2 fully accommodated in the support housing 3.

[0041] Fig. 3B shows the display apparatus 1 with the LCD-panel 2 slid out of the support housing 3. In this mode, the display panel may not receive television signals over the input 11. Accordingly other information can be displayed on the LCD-panel 2, such as a clock, a preferred image such as a company logo. Alternatively or in addition weather forecasts or other actual information may be displayed.

[0042] Fig. 3C shows the display apparatus 1 with the LCD-panel 2 slid with a portion 4' of the display portion 4 out of the support housing 3. In this mode, the display panel may not receive television signals over the input 11. The visible portion 4' may be used to display share prices, news-feed or other information in a ticker-tape format or mode.

[0043] Fig. 3D shows the display apparatus 1 with the LCD-panel 2 slid with a portion 4" of the display portion 4 out of the support housing 3 to display image information, such as television signals, in a first format, e.g. 4:3. The video card 13 may allow the full image content to be displayed on the portion 4". A black part of the display portion 4 is hidden as this part is slid into the support housing 3.

[0044] Fig. 3E shows the display apparatus 1 with the LCD-panel 2 slid with the display portion 4 out of the support housing 3 to display image information, such as television signals, in a first format, e.g. 16:9.

[0045] Finally, in Fig. 3F the display apparatus 1 is shown with both the display portion 4 and the non-display portion 5 slid out of the support housing 3. Consequently, the camera 6 is available for e.g. video conference purposes or as a web-cam.

[0046] It should be appreciated that the invention is not limited to the above described embodiment, as the display apparatus 1 may e.g. comprise a second display

to display other information such as another television channel. Moreover, such a panel may be a touch screen panel to input instructions for the operation of the display apparatus 1 or to arrange and operate an internet connection. The support housing 3 may also comprise other input interfaces, such an input for a mouse and a keyboard, either wired or wireless.

[0047] Fig. 4 illustrates an identification system 100 comprising a display apparatus 1 with a display portion 4. The display apparatus 1 may comprise a flat display panel 2 and a support housing 3 as described above and defined in one or more of the claims 1-16. The display apparatus 1 comprises a memory module 101, that may be provided in the support housing 3 as an electronic module.

[0048] The identification system 100 further comprises a remote control device 110 and a further identification device 120.

[0049] The remote control device 110 controls the display apparatus 1 in a manner well known in the art. Accordingly, the control device 110 comprises one or more control means 111, such as buttons, to operate the remote control device 110. A special control means is displayed as button 112, hereinafter referred to as the identification button 112. Finally, the remote control device 110 according to the invention has an interface 113 to communicate with the further identification device 120. It is noted that the remote control may be a conventional television control, but also includes other control means, such as a game console, a keyboard, a mobile phone, a personal digital assistant, a watch or other means to store and transmit an identification code.

[0050] The further identification device 120 comprises an identification code, stored in a memory 121. The identification device is typically carried by a user, wherein the identification code stored in the memory 121 identifies the user. The identification device may have pocket-size or smaller dimensions. Further the identification device comprises an interface 122 adapted to transmit the identification code the remote control device 110 via the interface 113. It is noted that the further identification device 120 is not a remote control device for controlling the display apparatus 1.

[0051] The identification device 120 may be a chip card. In that case the remote control device 110 comprises an opening for insertion of the chip card to enable data transmission of at least the identification code to the remote control device 110.

[0052] Alternatively the identification device 120 may be a transponder, preferably a radio frequency identifier tag (RFID) well known in the art. In that case the tag 120 may wirelessly transmit the identification code to the remote control device 110.

[0053] In operation according to an embodiment of the invention, first the identification device 120 is brought by the user in communicative connection with the remote control device 110 to enable transmission of at least data representative of the identification code

from the identification device 120 to the remote control device 110. The identification code identifies the identification device 120.

[0054] Subsequently, the user operates the identification button 112 to identify himself at the display apparatus 1. In this step data representing the identification code is transmitted from the remote control device 110 to the display apparatus 1. The memory 101 has stored the access rights for the user to the display apparatus 1 by assigning the identification code to these access rights. Accordingly, the user is allowed to operate the display apparatus 1 as defined by the access rights. These access rights may include the rights defined in WO 98/20678.

[0055] It should be appreciated that the invention is not limited to the above described embodiment for the identification system 100, as e.g. non-allowed access can be blocked in various ways. E.g. the display apparatus 1 may comprise a verification module 103 that has loaded the access rights from the memory 101 assigned to the received authorization code. The verification module 103 may verify each instruction from the remote control device 110 and verify whether the action following said instruction is allowed. If not, the display apparatus 1 may simply not respond to the instruction or display a message on the display portion 4. To access such a part appropriate identification should first be received from the remote control 110.

Claims

1. A display apparatus (1) comprising at least one flat display panel (2) and a support housing (3) adapted to accommodate said flat display panel (2), wherein said display apparatus (1) is adapted to slide out at least a portion (4;4';4'') of said flat display panel (2) from said support housing (3) for display of image information and said support housing (3) comprises at least one electronic module (12;13;14;101) for displaying said image information on said flat display panel (2).
2. The display apparatus (1) according to claim 1, wherein said support housing (3) comprises an input (11) for receiving image signals and said electronic module (13;14) comprises a processing module for processing said image signals.
3. The display apparatus (1) according to claim 1 or 2, wherein said support housing (3) comprises a TTL-to-LVDS converter (13) and a cable (16) to transmit LVDS signals from said converter to said flat display panel (2).
4. The display apparatus (1) according to one or more of the preceding claims, wherein said support housing (3) comprises a motor (7) to slide out said flat display panel (2).
5. The display apparatus (1) according to one or more of the preceding claims, wherein said display apparatus (1) comprises a detector (12) for detecting the receipt of activation signals and said display apparatus (1) is adapted to slide out said flat display panel (2) on detection of said receipt of activation signals.
6. The display apparatus (1) according to one or more of the preceding claims, wherein said flat display panel (2) comprises a non-display portion (5) with an built-in camera (6).
7. The display apparatus (1) according to one or more of the preceding claims, wherein said support housing (3) comprises a remote control input (15).
8. The display apparatus (1) according to one or more of the preceding claims, wherein said support housing (3) defines a volume and said flat display panel (2) occupies said volume in the range of 20-50% when slid fully in said support housing (3).
9. The display apparatus (1) according to one or more of the preceding claims, wherein said support housing (3) comprises a metallic enclosure (31).
10. The display apparatus (1) according to one or more of the preceding claims, wherein said support housing (3) comprises an input (11) for receiving audio information and one or more speakers (37) to make said audio information audible.
11. The display apparatus (1) according to one or more of the preceding claims, wherein said support housing (3) is adapted to exchangeably fixate one or more covers (32).
12. The display apparatus (1) according to one or more of the preceding claims, wherein said support housing (3) comprises wheels (10) for moving said display apparatus (1).
13. The display apparatus (1) according to one or more of the preceding claims, wherein said support housing (3) comprises one or more light emitting elements (40).
14. The display apparatus (1) according to one or more of the preceding claims, wherein said support housing (3) comprises an opening for sliding out said flat display panel, said opening having sweeping means (41) adapted, in use, to clean said flat display panel (2) on sliding out.
15. The display apparatus (1) according to one or more

of the preceding claims, wherein said display apparatus (1) is a television apparatus.

ling access rights to said display apparatus (1).

16. A display apparatus (1) comprising at least one flat display panel (2) and a support housing (3) adapted to accommodate said flat display panel (2), wherein said display apparatus (1) is adapted to slide out at least a portion (4;4';4'') of said flat display panel (2) from said support housing (3) for display of image information and said support housing (3) further comprises wheels (10) for moving said display apparatus (1) and/or comprises a metallic enclosure (31). 5 10
17. An identification system (100) for controlling access rights to a display apparatus (1), said display apparatus (1) being adapted to communicate with a remote control device (110) for controlling said display apparatus (1), wherein said remote control device (110) comprises an interface (102;113) to receive an identification code from a further identification device (120). 15 20
18. The identification system (100) according to claim 17, wherein said further identification device (120) is a chip card or a transponder comprising said identification code. 25
19. The identification system (100) according to claim 17 or 18, wherein said interface (102;113) allows wireless transmission of said identification code. 30
20. The identification system (100) according to one or more of the claims 17-19, wherein said display apparatus (1) and/or said remote control device (110) comprises a memory (101; 114) to store access rights assigned to said identification code. 35
21. A remote control device (110) for controlling a display apparatus (1), said remote control device (110) comprising an interface (113) for receiving an identification code from an identification device (120). 40
22. The remote control device (110) according to claim 21, wherein said remote control device (110) comprises means (112) to initiate transmission of data representing said identification code to said display apparatus (1). 45
23. The remote control device (110) according to claim 21 or 22, wherein said interface (113) allows wireless transmission of said identification code. 50
24. An identification device (120), such as a chip card or a transponder, comprising an identification code, adapted to transmit said identification code to a display apparatus (1) or a remote control device (110) for controlling said display apparatus (1) for control- 55

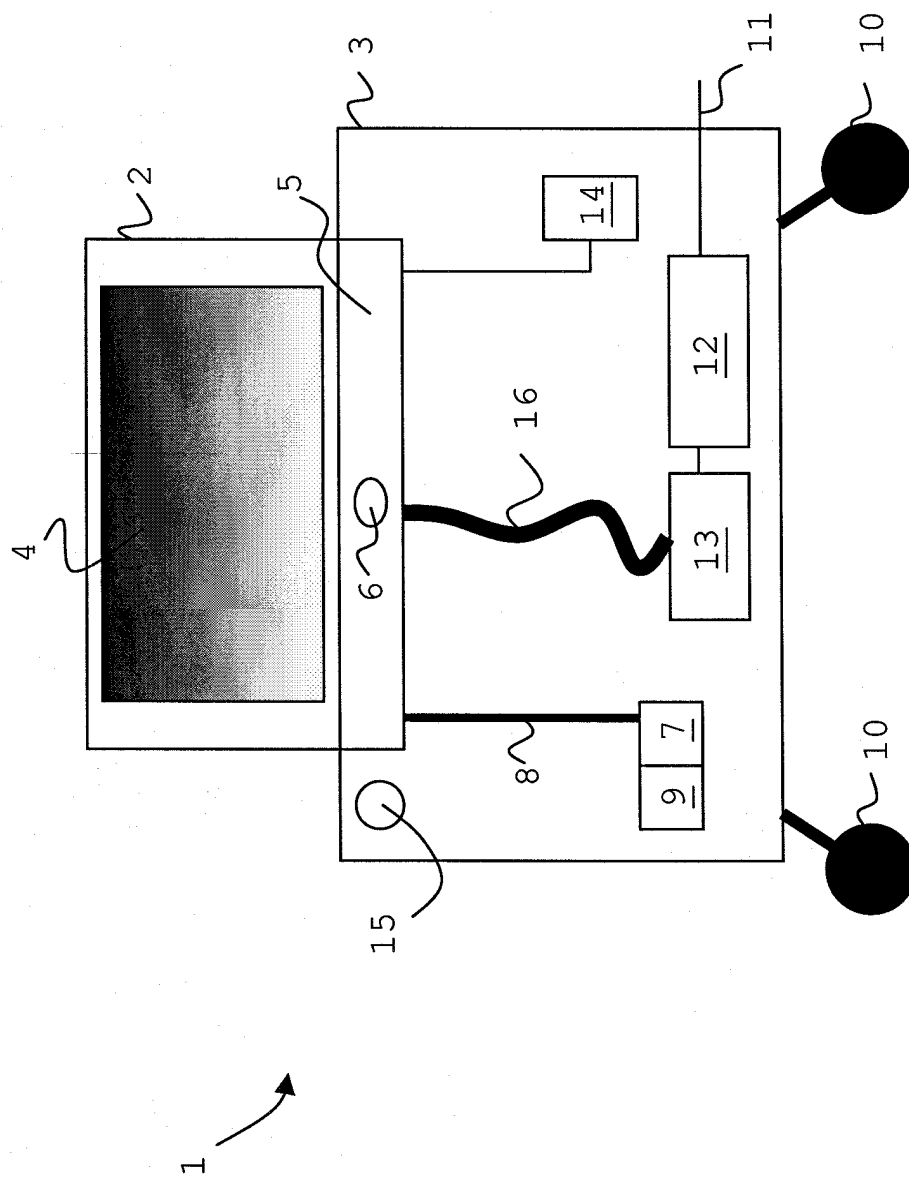


FIG. 1

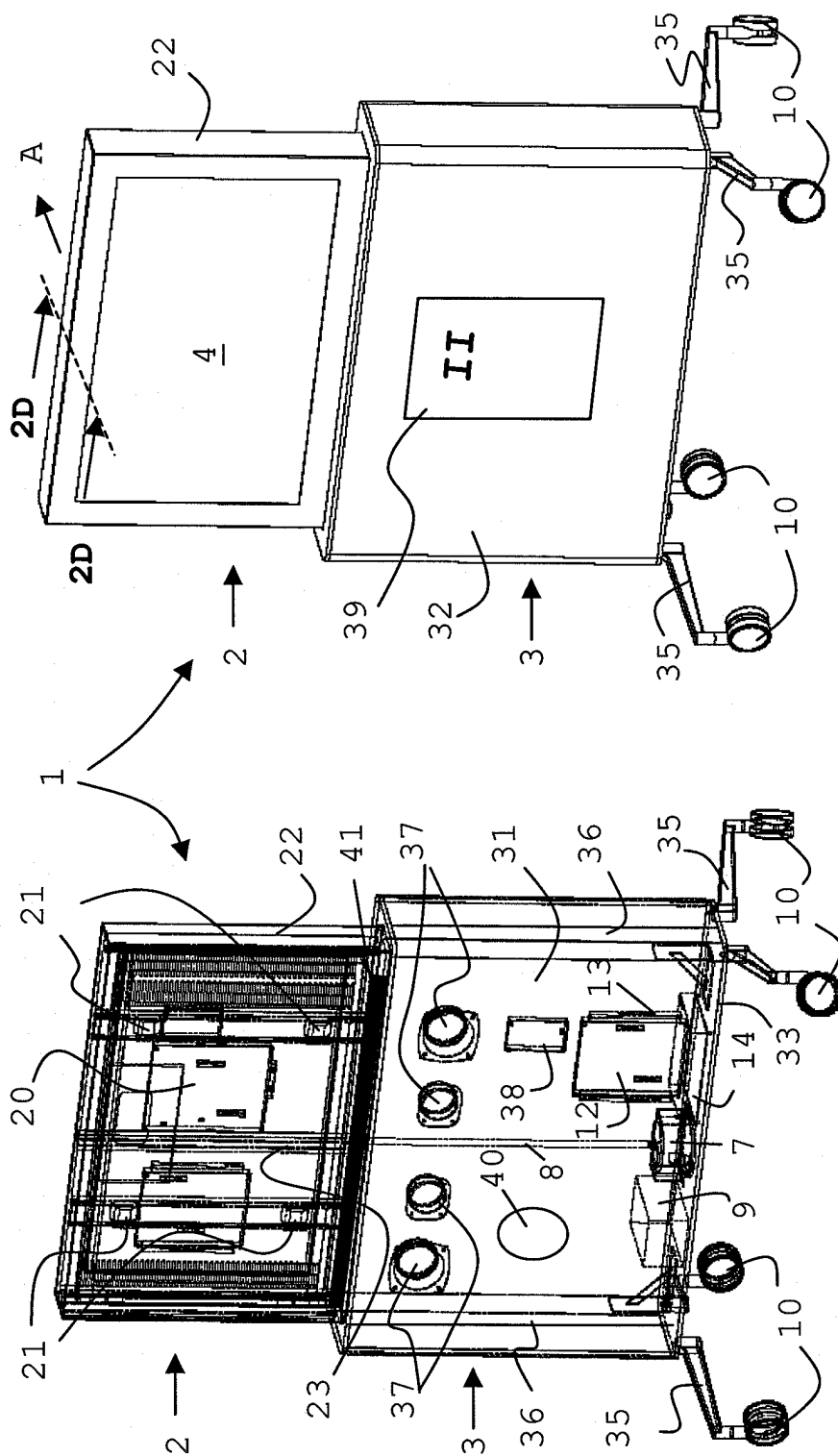


FIG. 2B

FIG. 2A

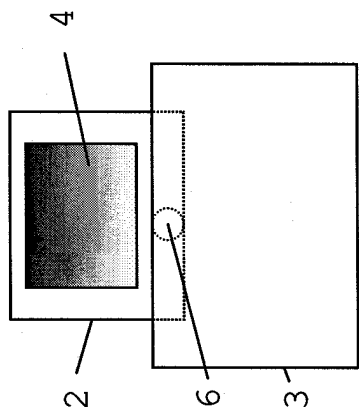


FIG. 3A

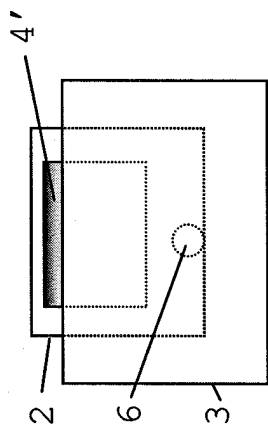


FIG. 3B

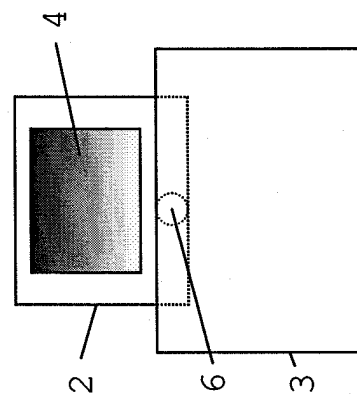


FIG. 3C

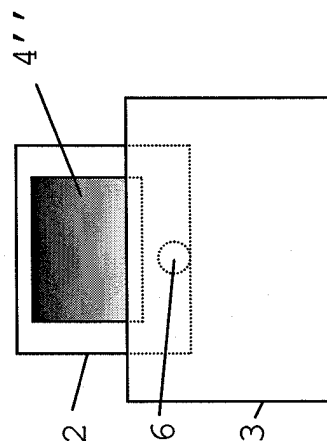


FIG. 3D

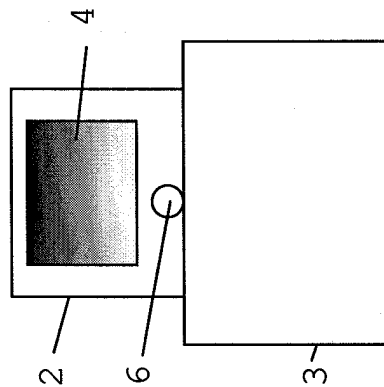


FIG. 3E

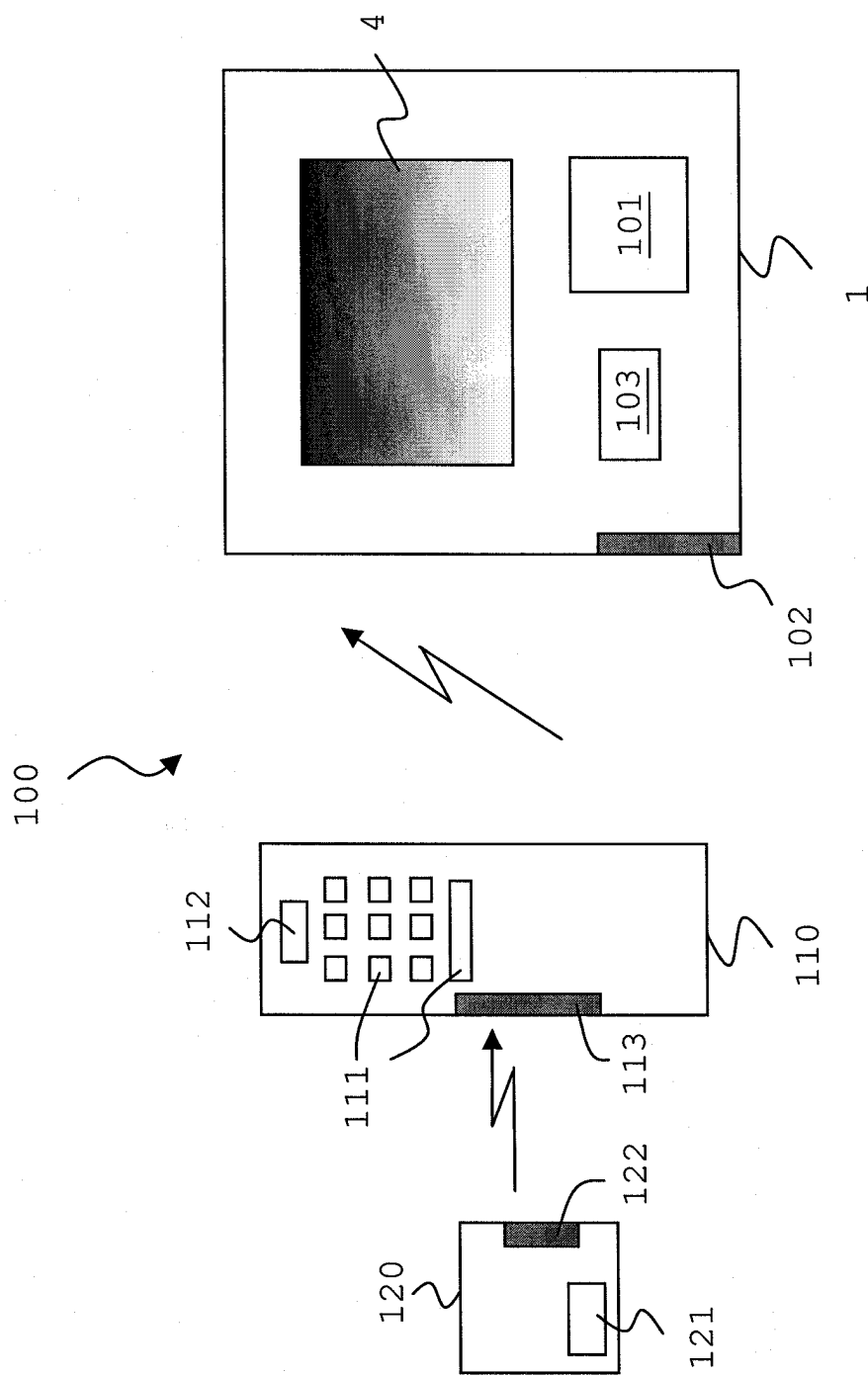


FIG. 4



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 10 2072

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 2002/101139 A1 (LEE TSAI MING) 1 August 2002 (2002-08-01) * abstract; figures 2-4 * * page 1, column 2, paragraph 6 - page 2, column 1, paragraph 1 * -----	1,2,4	A47B81/06
X	US 4 735 467 A (WOLTERS ET AL) 5 April 1988 (1988-04-05) * abstract; figures 1-3,7 * * column 4, line 6 - line 29 * -----	1,4	
E	US 2004/090149 A1 (CHANG CHUN-CHUNG) 13 May 2004 (2004-05-13) * the whole document * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A47B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		17 March 2005	Jones, C
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

2
EPO FORM 1503 03/82 (P04/C01)



European Patent
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Application Number

EP 04 10 2072

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-16



European Patent
Office

LACK OF UNITY OF INVENTION
SHEET B

Application Number

EP 04 10 2072

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-16

A display apparatus comprising at least one flat display panel and a support housing adapted to accomodate said flat display panel, wherein said display apparatus is adapted to slide out said flat display panel.

2. claims: 17-20

An identification system for controlling access rights to a display apparatus, said display apparatus being adapted to communicate with a display apparatus remote control device, wherein said remote control device comprises an interface to receive an identification code from a further identification device.

3. claims: 21-23

A remote control device for controlling a display apparatus, said remote control device comprising an interface for receiving an identification code from an identification device, wherein said remote control device comprises means to initiate transmission of identification code data to display apparatus.

4. claim: 24

An identification device comprising an identification code to transmit said identification code to a display apparatus or a remote control device for controlling said display apparatus and access rights to said display apparatus.

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 04 10 2072

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

17-03-2005

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2002101139	A1	01-08-2002	NONE	
US 4735467	A	05-04-1988	NONE	
US 2004090149	A1	13-05-2004	NONE	