

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 543 118 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
02.01.1997 Bulletin 1997/01

(51) Int Cl. 6: **G09B 5/06**

(21) Application number: **92116623.7**

(22) Date of filing: **29.09.1992**

(54) Information display system for electronically reading a book

Informationsanzeigesystem zum elektronisch Lesen eines Buches

Système d'affichage d'information pour la lecture électronique d'un livre

(84) Designated Contracting States:
DE FR GB

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(30) Priority: **21.11.1991 JP 332541/91**

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(43) Date of publication of application:
26.05.1993 Bulletin 1993/21

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EP-A- 0 455 147 **WO-A-90/15402**
WO-A-91/07715 **WO-A-92/15077**
US-A- 4 802 092 **US-A- 4 809 246**
US-A- 4 884 974 **US-A- 4 891 474**

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Description

The present invention relates to an apparatus for displaying a video image on a video display and an information storing device for use with such an apparatus.

Electronic instruments that use cards made by printing or describing graphic images as figures, letters, codes, etc., on the surface of sheets of paper, etc., with special conductive ink or special paint, and that read the information described on such cards with a touch pen, etc., and play back audio and video signals via external instruments such as television sets have been used in the past for the purposes of play, learning, etc.

However, such cards have usually required special processing such as conductive paint, bar codes, etc., for the purpose of reading the information. The electronic cards which use conductive paint have the following problems:

1. The printing process is complicated.
2. It is difficult to render in natural colors.
3. The printed surface deteriorates, causing difficulty in reading.
4. Because a connector is necessary, electrical failure is likely to occur.
5. The bookbinding process is complicated, etc.

The electronic cards using bar codes have the following problems:

1. Because considerable space is needed for printing the bar code, the quantity of information contained in a page is therefore limited.
2. The aesthetic rendering is inhibited by the bar code.
3. If the bar code is blurred or otherwise marred, it will become difficult to read, etc.

Thus, the computer field is still seeking to provide an information display system utilizing an electronic book that can resolve the problems that have occurred in the past.

The US-A-4 802 092 discloses an apparatus for displaying a video image on a video display according to the preambles of claims 1 and 9. Regarding claim 10, US-A-4 884 974 discloses an information storing device comprising:

a sheet plate with a plurality of visual indicia printed at locations of the surface thereof;
 a read-only memory physically combined with the sheet plate and storing a plurality of packets of information with predetermined data ; and
 a connector means electrically connecting the read-only memory with a control means when the information storing device is placed on the first planar panel.

The WO-A-90 15 402 discloses a toy or educational device comprising a housing with an upper surface on which a book or sheet of paper may rest. Underneath the surface a number of proximity sensors are provided.

5 The upper surface is provided with electrical or optical sensors adapted to identify codes formed on the rear face of the book or sheet of paper. The housing has a loudspeaker and a slot to receive a cassette tape. The control buttons are provided. The sheet of paper may
 10 be located on the upper surface of the book. The loudspeaker gives preliminary instructions, and, when a finger is placed upon a certain part of the picture, the machine then responds with a further comment.

15 It is an object of the invention to provide an apparatus for displaying a video image on a video display that can be easily operated and to provide an information storing device that can be easily used with such an apparatus.

20 The object is solved by the apparatus for displaying a video image on a video display according to claim 1 or 9 and by the information storing device according to claim 10.

25 An electronic book-reading system and information storage system is capable of reading the contents of the sheets of a book having various information such as figures, letters, codes, etc., applied to the surface of the sheets in the book. The book is mounted at a fixed location, and the user can arbitrarily designate a specific location to identify the particular indicia on the sheet. A
 30 sensor system can detect the arbitrarily-designated location and, in some cases, can further employ a page detection system to detect which specific page is being addressed and whether it is the front or the back of the page. A location detection circuit can, from a determination of an absolute location signal or a predetermined
 35 reference point, plus the arbitrarily-designated location point entered by the operator, determine which specific indicia is being designated by the operator. A ROM, that can be integrated with the electronic book, can be appropriately addressed on the basis of the sensor system to thereby provide the electronic information corresponding to the specific figures, letters, codes, etc., that are displayed in the electronic book. The ROM which has memorized the location of the indicia and related
 40 information at that location can be addressed and downloaded for subsequent processing, for example, through a computer-driven system that can provide audio and video images.

45 Various forms of location detection circuits can be utilized, such as an electromagnetic induction system which includes a transmitter for generating electromagnetic signals to a planar panel having multiple electrodes arranged in a horizontal direction and a vertical direction at fixed locations. An X direction decoder and
 50 a Y direction decoder can be responsive to a sensor that designates an arbitrary location on the planar panel.

Alternatively, an optical system can be utilized having a grid of optical light beams defining a crossing pat-

tern on a planar surface, with corresponding photoreceptors indicating the receipt of each light beam. A light-intercepting or blocking member can be positioned in an arbitrary location on the panel. An X direction location circuit and a Y direction location circuit can detect the relative coordinates of the blocked light beams, to thereby provide information for a detection control circuit to determine a specific arbitrarily-designated location.

Additionally, an ultrasonic system can be utilized wherein an ultrasonic generator can be used to designate coordinates within a fixed location. At least three ultrasonic sensors can receive a signal of the ultrasonic generator. From this information, a detection circuit can determine the relative location of the ultrasonic generator to designate an arbitrary position.

In addition, a page detection system is also provided wherein multiple perimeter sensors can detect the shape of the perimeter of a sheet of a book, and thereby define which page is being addressed. As can be appreciated, a ROM storing a program containing the information on the sheet can be integrated with the form of the electronic book, and a housing can house both audible speakers and monitors such as CRT tubes and liquid crystal displays. The individual sheets in the book can be of any configuration, such as squares, circles, clouds, etc., and is preferably of a thin body of paper or card material. While it is contemplated that the sheets will be planar, it is also possible for them to have concave or convex surfaces, or to have relief surfaces or perforated surfaces. The descriptions of the terminology "vertical direction" and "horizontal direction" are relative, and are simply stated herein for purposes of defining a coordinate system.

As can be readily appreciated, the information contained within the sheet is indirectly outputted by reading the contents of a ROM which has the same recorded information that has been mapped to define the specific location coordinates with the sheet. When the sheet is located at a fixed location, a determination of the coordinates relative to that fixed location will then identify the address of the information contained in the ROM. In some of the detection systems, the coordinates can also be defined on a time base, and a signal generated by the sensor can determine the coordinate by comparing the time base with the received signal.

The objects and features of the present invention, which are believed to be novel, are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages, may best be understood by reference to the following description, taken in connection with the accompanying drawings.

Figure 1 is a schematic diagram of an apparatus for displaying a video image on a video display for describing the technological background of the present invention;

Figure 2 is a schematic diagram disclosing one em-

bodiment of an electromagnetic detection circuit; Figure 3 is a schematic diagram disclosing an alternative embodiment of an optical detection circuit; Figure 4 is another embodiment of an ultrasonic sound detection circuit;

Figure 5 is a schematic diagram of a page-detection control circuit;

Figure 6 is a schematic diagram of an information and entertainment system; and

Figure 7 is a perspective view of an alternative embodiment of the present invention.

The following description is provided to enable any person skilled in the art to make and use the invention and sets forth the best modes contemplated by the inventors of carrying out their invention. Various modifications, however, will remain readily apparent to those skilled in the art, since the generic principles of the present invention have been defined herein specifically to provide an electronic book information display system.

In an electronic book-reading process or device of this invention, the following measures are adopted: the contents of the sheet or the book consisting of a number of the sheets bound together on which such information as figures, letters, codes, etc., are applied are mounted at a fixed location on a plane. An arbitrarily-assigned location within the aforementioned fixed location is detected by a location detection circuit. A page detection circuit can also detect which page is being addressed. The absolute location signal of the aforementioned arbitrarily-assigned location is obtained by a location signal detected by the location detection circuit and the page signal obtained by the page detection circuit, if necessary. The absolute location signal and the contents of a ROM in which such information as specific figures, letters, codes, etc., are preassigned and memorized for the absolute location of the sheet or book are compared, and the contents of the ROM memorized at the matched absolute location is output as the information signal. The information signal is output as at least one of either an audio or a video signal.

In addition, a device which reads the contents of the sheet or the book includes a location detection means that detects the coordinates of the sheet or the page of the book mounted at a fixed location, and a page detection means which detects the front or the back of the sheet or the page of the aforementioned book. An absolute location detection circuit detects an absolute location by a location signal obtained by the location detection means and the page signal obtained by the page detection means, and obtains the absolute location signal. A control device having a control circuit compares the contents of the ROM in which the information for the absolute location of the sheet or book is stored beforehand and the absolute location signal obtained by the absolute location detection circuit, and outputs the information at the matched location as the information sig-

nal. This information can be output as at least either an audio or a video signal to an output playback device which plays back the output of the control circuit.

The location detection means can be an electromagnetic induction system, composed of a transmitting part which generates electromagnetic signals, a planar panel having multiple electrodes arranged in a horizontal direction and a vertical direction at a fixed location, an X direction decoder and a Y direction decoder which provide the electromagnetic signals to the electrodes successively, a receiving part which detects the electromagnetic signal when it is near the planar panel, and a detection control circuit which obtains the location signal of the coordinate in the planar panel by a sending signal from the transmitting circuit and the reception signal obtained from the receiving circuit.

Alternatively, the location detection means can be an optical system, composed of multiple emission parts, each set in the vertical direction and the horizontal direction surrounding a fixed location, a light-intercepting part which detects the light from each of the emission parts, an X direction location detection part which detects the shaded state of the light at the vertical direction light-intercepting part and comprises the vertical detection signal, a Y direction location detection part which detects the shaded state of the light at the horizontal direction light-intercepting part and comprises the horizontal detection signal, and a detection control circuit which obtains the location signal of the coordinates within the fixed location by the vertical detection signal and the horizontal detection signal.

The location detection means can include an ultrasonic system composed of an ultrasonic generator which can assign coordinates within a fixed location, at least three ultrasonic sensors which receive the signal of the ultrasonic generator, a receiving part which receives each of the multiple ultrasonic reception signals from the ultrasonic sensors and outputs the reception signal, a transmitting part which supplies the ultrasonic signal to the ultrasonic generator by a sending signal, and a detection control circuit which obtains the location signal of the assigned coordinates within a fixed range by the reception signal and the sending signal.

The page detection means can be composed of multiple perimeter sensors which detect the shape of the perimeter of the sheet or a book consisting of a number of sheets bound together, and a page detection control circuit which determines the page by detecting the state of the multiple perimeter sensors.

Referring to Figure 1, an electronic book and information processing system is disclosed wherein the electronic book 2 is positioned at a fixed location on a housing of the reading device 4. A location detection sensor system 6 extends across the top and left side of the electronic book. A page detection system 8 is also provided across the bottom and right side of the electronic book. Respective outputs from the location detection system 6 on line 10 and the page detection system 8 on line 12

are forwarded to an absolute location detection circuit 14. Thus, if the user designates particular coordinates within the electronic book 2, these coordinates are detected by the location detection system 6 and sent to the location detection circuit 14 as a location signal. In addition, the page detection system can detect a specific page 16, and a page signal can be sent to the absolute location detection circuit 14. If the insert into the reading device 4 is simply a sheet, the page detection circuit will output a page signal indicating no pages.

The output of the location detection circuit provides information of the designated coordinates within the page of the electronic book 2. The contents which are printed on the surface of the book 2, or the information to which it is related, are stored relative to the coordinates of each page of the book 2 in a ROM 24. The contents of this ROM are addressed to match the coordinates of the absolute location signal. The control circuit 18 can retrieve the information from those addresses in the ROM 24 and use them to drive a video drive circuit 20 and/or an audio drive circuit 22. The ROM 24 is shown remote from the electronic book 2. A video signal from the video drive circuit 20 can drive a video display 26, which can take the form of an LCD display, a CRT monitor, etc.

Additionally, the video display can be integrated into a unitary cabinet 30 or it can be remote, and a television receiver can be driven. The audio drive circuit 22 can also appropriately drive a speaker 28, which can again be integrated into a unitary cabinet 30 or can be remote. For example, the combination of the video display and speaker can be considered to be an output playback device 30 that can be a stand-alone unit. The video signals and the audio signals are only output if they are recorded in the ROM. It is natural that sometimes it will be only image or only sound, and sometimes it can be a combination of both.

Referring to Figure 2, a schematic is disclosed of one form of location detection system 6. In this embodiment, an electromagnetic induction system is utilized, and comprises a grid pattern of multiple vertical electrode wires 32 that cross multiple horizontal electrode wires 34. This grid pattern constitutes a planar panel 36. An X direction decoder 38 and a Y direction decoder 40 are, respectively, connected to a transmitter circuit 42. The X direction decoder 38 adds the vertical electromagnetic signals from each of the vertical electrodes in sequential order. In a similar manner, the Y direction decoder 40 adds the horizontal electromagnetic signals from each of the horizontal electrodes in sequential order. A pickup sensor 44 includes a coil which can sense an electromagnetic signal when applied to the planar panel 36.

By placing the pickup sensor 44 adjacent the planar panel 36, it can sense the vertical electromagnetic signal and the horizontal electromagnetic signal that are applied to the respective wire electrodes 32 and 34. These signals are added together, and are then trans-

mitted to a receiver circuit 46. A detection control circuit 48 controls the timing sequence of the electromagnetic signal applied to the vertical electrodes 32 and to the horizontal electrodes 34, respectively. It can thereby determine, from the input from the receiver circuit 46, based upon the same time interval (same clock base), the location of the coil on the pickup sensor 44 adjacent the planar panel 36. Thus, the fixed location is obtained and output as the location signal on line 50.

Referring to Figure 3, another schematic drawing is provided of an alternative location detection system. This system is basically an optical system using a linear principle of light. In the vertical direction, arrow A, and the horizontal direction, arrow B, are a series of light emitters 52 and 54, respectively. These respective light emitters emit a grid pattern of light beams to correspondingly-located photodiode receivers 56 in the horizontal plane and photodiode receivers 58 in the vertical plane. A Y detector circuit 60 is connected to the light receiver array 58, while an X detector circuit 62 is connected to the light receiver array 56. The outputs from these respective detection circuits 60 and 62 are directed to a detection control circuit 64 to provide the coordinates of any blocking interference with the light grid.

As can be appreciated, a pointer, or even a finger, can be inserted into the grid pattern of light, to thereby block a vertical and horizontal light beam. By sequentially polling each of the light receiver arrays, the location of the blocked beam can be ascertained, and the coordinates of that position can be determined. This information can then be used to address, for example, a ROM to determine the appropriate stored information for that designated area. As can be appreciated, in operation, the page of the book should be inserted underneath the light grid, and the light grid should have a sufficient number of light beams to accommodate the necessary coordinate system. That is, a fine pattern may require a denser light grid than a coarser pattern would require.

Referring to Figure 4, an alternative location-detecting system is disclosed, wherein the electronic book 2 has a series of ultrasonic sensors 66 positioned at locations spaced around the electronic book 2. An ultrasonic generator 68 is connected to a transmitter circuit 70 which is capable of generating ultrasound when contacting the surface of the electronic book 2. The ultrasonic sensors 66 will receive the ultrasound signal from the ultrasound generator 68 and will relay it to a receiver circuit 72. The output from the receiver circuit 72 is provided to a detection control circuit 74. The ultrasonic signal that is transmitted to the ultrasonic generator is controlled by the detection control circuit 74, and appropriate modulation of the signal can be added if necessary. The detection control circuit 74 can detect the coordinates of the fixed location specified by the ultrasonic generator 68 by comparing each set location of the ultrasonic sensor 66 on a time basis, and thereby derive a location signal.

Referring to Figure 5, a page detection system is

disclosed wherein the ultrasonic book 2 has a series of sheets or pages 76 having peripheral notches 78 along the vertical edge of the pages. These notches are coded to identify a specific page. Thus, the notch pattern is unique to a specific page. Perimeter sensors 80 are mounted adjacent one edge of the page detection system and coordinated with the alignment of the notches 78 on the pages 76. These perimeter sensors 80 can detect the light passing through the notches to produce an appropriate signal indicating which page is open. For example, if the light has passed through only three notches, then it can be easily determined that a page 82 is positioned across the sensors 80. A page detection control circuit 84 can poll the sensors and determine which page is being exposed. As can be readily appreciated, various kinds of page settings can be assigned by number, interval, etc., related to the perimeter of the page, to distinguish between the pages.

Referring to Figure 6, a schematic drawing of an embodiment is disclosed, wherein a ROM 86 is integrated directly into the electronic book 2. In this regard, a connector 88 is used to connect the ROM 86 with the control circuit 18. Each of the other elements are the same, as set forth in the embodiment of Figure 1.

As can be readily appreciated, the video display 26 and the speaker 28 can also be integrated with the computer control system as a unitary display device. The display could have a built-in liquid crystal display or a CRT monitor, and can also have a built-in speaker. Alternatively, external speakers and independent television monitors can also be used.

Referring to Figure 7, an embodiment of the present invention is disclosed in the format of a drawing system for small children with an electronic book reading device of the present invention.

An electronic book 100 is set within an indented portion of a pivotal back cover 102 of the toy housing. A lower base portion 101 of the toy housing supports operator controls and a touch panel 106. The touch panel 106 can utilize the location detection system described above to define a specific position. While not shown, a television monitor 107 can be interconnected to receive inputs from the user. In operation, the user can utilize the wand or pen 103. The user can touch the electronic book which, for example, can be subject to a location detection circuit on the open page 104. For example, an elephant 105 could be touched, and then subsequently the operator can designate where he or she wishes to place the elephant on the screen of the television monitor 107 by contacting the touch panel 106 with a pen, or even a finger, in an alternative embodiment. A child is even able to relocate the elephant on the television monitor through the use of a joystick input 108. The elephant can move on the screen while making sounds which could be associated with an elephant, from the speaker 109 on the toy device, or from the speaker 110 mounted on the television receiver.

In a similar manner, the other characters and indi-

cia, e.g., monkey, mountain, etc., can be designated from the electronic book 100 and located on the television monitor 107 in order to draw a picture on the television screen. The control buttons 111 can be used for designating the location of characters, while the slide control member 112 can be used for changing the color of the screen or the characters.

As can be appreciated, various alternative arrangements can be utilized to accomplish the purposes of the present invention. For example, the use of the optical detection system can be free from any noise that could be associated with electromagnetic transmissions, and it would not be necessary to use any special pickup devices, pointers, etc. Any rod-shaped body, such as a finger, hand, or pencil that can cast a shadow can be utilized. Because the location detection system can be independent of the specific electronic book or page, there is no necessity to utilize special paints, printing processes, or other special preparations. It is only necessary that the sheet does not interfere with the special location detection circuit that is to be utilized. Thus, the printed indicia can be of a conventional configuration and relatively easily and inexpensively created. The only parameters required are that the information be appropriately located relative to the location detection circuit so that any ROM containing stored information relative to that page can be addressed appropriately by the location detection circuit. In operation, a child can utilize the entertainment drawing system disclosed in Figure 7 in a highly enjoyable manner. He or she is, in fact, operating with a user-friendly approach to a computer system.

Those skilled in the art will appreciate that various adaptations and modifications of the just-described preferred embodiment can be configured without departing from the scope and spirit of the invention. Therefore, it is to be understood that, within the scope of the appended claims, the invention may be practiced other than as specifically described herein.

Claims

1. An apparatus for displaying a video image on a video display, comprising:

a location detection means (4) with a planar panel on which an information storing device (2) is removably mounted and including a sensor means (6,8) providing a location signal which is indicative of the two dimensional location on the planar panel; and

a control means (18), responsive to the location signal supplied from the location detection means;

the information storing device (2) comprising:

a sheet plate with a plurality of visual indicia printed at locations of the surface thereof;

characterized in that

said control means (18) retrieves data from the information storing device;
 said information storing device (2) comprises :
 a read-only memory (86) physically combined with the sheet plate and storing a plurality of packets of information with predetermined data and with addresses corresponding to coordinates of the two dimensional locations on the surface of the sheet plate on which said respective visual indicia are printed; and
 a connector means (88) electrically connecting the read-only memory (86) with the control means (18) when the information storing device (2) is placed on the planar panel;

wherein, when an operator selects one of the visual indicia with manipulation on the sheet placed on said planar panel, the location detection means (4) supplies a location signal indicative of the indicium selected by the operator to the control means (18) and the control means (18) retrieves data corresponding to the specific indicia selected by the operator from the read-only memory (88) with the address corresponding to the location signal.

2. The apparatus of claim 1, further comprising means (20) for providing a video signal for displaying on the video display (26) an image corresponding to the indicium selected by the operator by reference to the packets of information retrieved from the information storing device (2).

3. The apparatus of claim 1 or 2, wherein the information storing device (2) comprises a plurality of sheet plate bound together in a book format, each of the sheet plate having a plurality of visual indicia printed at locations on the surface thereof, and the location detection means (4) comprises a page discriminating sensor means (8) for determining a specific page of the plurality of sheets.

4. The apparatus of claim 2 or 3, further including operator controls for moving the image on the video display (26).

5. The apparatus of one of claims 1 to 4, wherein the location detection means (14) includes:

an electromagnetic transmitter (42);
 a grid array (36) of a predetermined pattern positioned adjacent the planar panel and connected to the transmitter; and
 a receiver member (44) that can be positioned

adjacent the grid array (36) to detect electro-magnetic induced current.

6. The apparatus of one of claims 1 to 4, wherein the location detection means (14) includes:

a series of light emitters (52,54) and light detectors (56,58) positioned to form an optical grid pattern of light beams adjacent the surface of the sheet placed on the planar panel, wherein the location detection means (14) determines the coordinates of any blocked light beams.

7. The apparatus of one of claims 1 to 4, wherein the location detection means (14) includes:

an ultrasonic transmitter circuit (70);
an ultrasonic generator (68) connected to the transmitter circuit (70); and
a series of spaced ultrasonic sensors (66) that can detect the ultrasound transmitted by the ultrasonic generator (68) wherein the location detection means (14) determines the coordinates of the ultrasonic generator (68) from the signals received by the sensors (66).

8. The apparatus of one of claims 3 to 7, wherein the page discriminating sensor means includes a plurality of light sensors (80) extending along a perimeter of the book format, and the number of activated light sensors (80) is indicative of a specific page.

9. An apparatus for displaying a video image on a video display (107), comprising:

a location detection means including a first panel on which an information storing device is removably mounted, a touch sensor (103) which is functionally connected with the first panel;
the information storing device comprising:
a sheet plate (104) with a plurality of visual indicia printed at locations of the surface thereof;
characterized in that

said apparatus for displaying a video image on a video display (107) comprises

a second panel (106) disposed separately from said first panel wherein said touch sensor (103) is functionally connected with said second panel (106),

means for generating location signals representing two-dimensional locations on the first and second panels (106) in response to an operator placing said touch sensor (103) thereon, a first control means (18, 20) functionally connected with the first panel for retrieving data out of the information storing device responsive to a location signal supplied from the location detection means and for providing, based on the retrieved data, a video signal for displaying a

video image on the video display (107);

a second control means functionally connected with the second panel (106) for providing a change to the displayed image responsive to a location signal supplied from said location detection means in response to the operator placing the touch sensor (103) on a selected location of the second panel;

said information storing device comprises:

a read-only memory (86) physically combined with the sheet plate and storing a plurality of packets of information with predetermined data and with addresses corresponding to coordinates of the two-dimensional locations on the surface of the sheet plate on which said respective visual indicia are printed; and

a connector means (88) electrically connecting the read-only memory (86) with the first control means when the information storing device is placed on the first planar panel; wherein, when an operator selects one of the visual indicia with manipulation of the touch sensor (103) on the sheet mounted on the first planar panel, the location detection means supplies a location signal indicative of the indicium selected by the operator to the control means and the first control means retrieves data corresponding to the specific indicia selected by the operator from the read-only memory (86) with the address corresponding to the location signal.

10. An information storing device for use with the apparatus of one of claims 1 to 8 comprising:

a sheet plate with a plurality of visual indicia printed at locations of the surface thereof;

a read-only memory (86) physically combined with the sheet plate and storing a plurality of packets of information with predetermined data and with addresses corresponding to coordinates of the two dimensional locations on the surface of the sheet plate on which said respective visual indicia are printed; and

a connector means (88) electrically connecting the read-only memory (86) with the control means of said apparatus when the information storing device is placed on the planar panel of said apparatus, such that the control means of said apparatus can retrieve data from the information storing device corresponding to the specific visual indicia selected by the operator by means of the location detection means of said apparatus.

11. An information storing device for use with the apparatus of claim 9, comprising:

a sheet plate with a plurality of visual indicia

printed at locations of the surface thereof;
 a read-only memory (86) physically combined
 with the sheet plate and storing a plurality of
 packets of information with predetermined data
 and with addresses corresponding to coordi- 5
 nates of the two dimensional locations on the
 surface of the sheet plate on which said respec-
 tive visual indicia are printed; and
 a connector means (88) electrically connecting
 the read-only memory (86) with the first control 10
 means of said apparatus when the information
 storing device is placed on the first planar panel
 of said apparatus, such that the first control
 means of said apparatus can retrieve data from
 the information storing device corresponding to 15
 the specific visual indicia selected by the oper-
 ator by means of the location detection means
 of said apparatus.

12. The information storing device of claim 10 or 11, 20
 comprising a plurality of sheet plate bound together
 in a book format, each of the sheet plate having a
 plurality of visual indicia printed at locations on the
 surface thereof. the sheets having indentations (78)
 for determining a specific page of sheets. 25

Patentansprüche

1. Gerät zum Anzeigen eines Videobildes auf einer 30
 Bildschirmanzeige mit

einem Positionserfassungsmittel (4) mit einem
 ebenen Bedienungspult, auf dem eine Informa-
 tionsspeichereinrichtung (2) entfernbar befe- 35
 stigt ist und das ein Sensormittel (6, 8) enthält,
 das ein Positionssignal, das die zweidimensio-
 nale Position auf dem ebenen Bedienungspult
 angibt, zur Verfügung stellt, und
 einem Steuermittel (18), das auf ein von dem 40
 Positionserfassungsmittel geliefertes Positi-
 onssignal reagiert,
 wobei die Informationsspeichereinrichtung (2)
 eine dünne Platte mit einer Mehrzahl von an
 Positionen ihrer Oberfläche aufgedruckten 45
 sichtbaren Anzeigen aufweist,

dadurch gekennzeichnet, daß

das Steuermittel (18) Daten von der Informati- 50
 onsspeichereinrichtung ausliest,
 wobei die Informationsspeichereinrichtung (2)
 einen Festwertspeicher (86), der physikalisch
 mit der dünnen Platte verbunden ist und der ei- 55
 ne Mehrzahl von Informationspaketen mit vor-
 bestimmten Daten und mit Adressen speichert,
 die Koordinaten von zweidimensionalen Posi-
 tionen auf der Oberfläche der dünnen Platte,

auf die die jeweiligen sichtbaren Anzeigen auf-
 gedruckt sind, entsprechen, und
 ein Verbindungsmittel (88), das den Festwert-
 speicher (86) mit dem Steuermittel (18) elek-
 trisch verbindet, wenn die Informationsspei-
 chereinrichtung (2) auf das ebene Bedienungsp-
 ult plaziert ist, aufweist,
 wobei das Positionserfassungsmittel (4), wenn
 ein Bediener eine der sichtbaren Anzeigen mit
 Manipulation auf dem auf dem ebenen Bedie-
 nungspult plazierten Blatt auswählt, ein Positi-
 onssignal, das die durch den Bediener ausge-
 wählte Anzeige angibt, an das Steuermittel (18)
 liefert und wobei das Steuermittel (18) Daten
 entsprechend der durch den Bediener ausge-
 wählten speziellen Anzeige von dem Festwert-
 speicher (88) mit der Adresse entsprechend
 dem Positionssignal ausliest.

2. Gerät nach Anspruch 1, gekennzeichnet durch ein 20
 Mittel (20) zum Zurverfügungstellen eines Bildsi-
 gnales zum Anzeigen eines Bildes auf der Bild-
 schirmanzeige (26) entsprechend der durch den
 Bediener ausgewählten Anzeige mit Bezug zu den
 von der Informationsspeichereinrichtung (2) ausge-
 lesenen Paketinformationen. 25

3. Gerät nach Anspruch 1 oder 2, dadurch gekenn- 30
 zeichnet, daß die Informationsspeichereinrichtung
 (2) eine Mehrzahl von in einem Buchformat verbun-
 denen dünnen Platten aufweist, wobei jede der
 dünnen Platten eine Mehrzahl von an Positionen
 auf ihrer Oberfläche aufgedruckten sichtbaren An-
 zeigen aufweist, und daß das Positionserfassung- 35
 mittel (4) ein Seitenunterscheidungssensormittel
 (8) zum Ermitteln einer speziellen Seite der Mehr-
 zahl von Blättern aufweist.

4. Gerät nach Anspruch 2 oder 3, gekennzeichnet 40
 durch eine Bedienersteuerung zum Bewegen des
 Bildes auf der Bildschirmanzeige (26).

5. Gerät nach einem der Ansprüche 1 bis 4, dadurch 45
 gekennzeichnet, daß

das Positionserfassungsmittel (14) einen elek-
 tromagnetischen Sender (42),
 eine Gitteranordnung (36) eines vorbestimm-
 ten Musters, das benachbart zu dem ebenen
 Bedienungspult angeordnet ist und das mit
 dem Sender verbunden ist, und
 ein Empfangsteil (44), das zu der Gitteranord-
 nung (36) benachbart positioniert werden kann,
 um elektromagnetisch induzierten Strom zu er-
 mitteln, enthält.

6. Gerät nach einem der Ansprüche 1 bis 4, dadurch 50
 gekennzeichnet, daß

das Positionserfassungsmittel (14) eine Reihe von Lichtsendern (52, 54) und Lichtdetektoren (56, 58) enthält, die so positioniert sind, daß eine optische Gitteranordnung von zu der Oberfläche des auf dem ebenen Bedienungspult positionierten Blattes benachbarten Lichtstrahlen gebildet wird, wobei das Positionserfassungsmittel (14) die Koordinaten von jedem unterbrochenen Lichtstrahl erfaßt.

7. Gerät nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß

das Positionserfassungsmittel (14) eine Ultraschallsenderschaltung (70), einen mit der Senderschaltung (70) verbundenen Ultraschallgenerator (68) und eine Reihe von mit Zwischenraum angeordneten Ultraschallsensoren (66), die von dem Ultraschallgenerator (68) gesendeten Ultraschall erfassen können, enthält, wobei das Positionserfassungsmittel (14) die Koordinaten des Ultraschallgenerators (68) aus den von den Sensoren (66) empfangenen Signalen bestimmt.

8. Gerät nach einem der Ansprüche 3 bis 7, dadurch gekennzeichnet, daß

das Seitenunterscheidungssensormittel eine Mehrzahl von Lichtsensoren (80), die sich entlang eines Umfanges des Buchformates erstrecken, enthält, wobei die Anzahl der aktivierten Lichtsensoren (80) eine spezielle Seite angibt.

9. Gerät zum Anzeigen eines Videobildes auf einer Bildschirmanzeige (107) mit

einem Positionserfassungsmittel, das ein erstes Bedienungspult, auf dem eine Informationsspeichereinrichtung entfernter befestigt ist, einen Berührungssensor (103), der funktionell mit dem ersten Bedienungspult verbunden ist, enthält, wobei die Informationsspeichereinrichtung eine dünne Platte (104) mit einer Mehrzahl von an Positionen auf ihrer Oberfläche aufgedruckten sichtbaren Anzeigen aufweist,

dadurch gekennzeichnet, daß

das Gerät zum Anzeigen eines Videobildes auf einer Bildschirmanzeige (107) ein zweites Bedienungspult (106), das separat von dem ersten Bedienungspult angeordnet ist, wobei der Berührungssensor (103) funktionell mit dem zweiten Bedienungspult (106) verbunden ist, ein Mittel zum Erzeugen von Positionssignalen, die die zweidimensionalen Positionen auf dem ersten und zweiten Bedienungspult (106) als

Reaktion auf einen Bediener, der den Berührungssensor (103) darauf plaziert, darstellen, ein erstes Steuermittel (18, 20), das funktionell mit dem ersten Bedienungspult verbunden ist und das auf ein von dem Positionserfassungsmittel geliefertes Positionssignal reagiert, zum Auslesen von Daten aus der Informationsspeichereinrichtung und zum Zurverfügungstellen, basierend auf den ausgelesenen Daten, eines Videosignales zum Anzeigen eines Videobildes auf der Bildschirmanzeige (107),

ein zweites Steuermittel, das mit dem zweiten Bedienungspult (106) funktionell verbunden ist und das auf ein von dem Positionserfassungsmittel als Reaktion auf den Bediener, der den Berührungssensor (103) auf einer ausgewählten Position auf dem zweiten Bedienungspult positioniert, geliefertes Signal reagiert, zum Zurverfügungstellen einer Änderung für das angezeigte Bild, aufweist,

wobei die Informationsspeichereinrichtung einen Festwertspeicher (86), der mit der dünnen Platte physikalisch verbunden ist und eine Mehrzahl von Informationspaketen mit vorbestimmten Daten und Adressen speichert, die Koordinaten von zweidimensionalen Positionen auf der Oberfläche der dünnen Platte, auf der die jeweiligen sichtbaren Anzeigen aufgedruckt sind, entsprechen, und

ein Verbindungsmittel (88), das den Festwertspeicher (86) mit dem ersten Steuermittel elektrisch verbindet, wenn die Informationsspeichereinrichtung auf dem ersten Bedienungspult plaziert ist, aufweist,

wobei das Positionserfassungsmittel, wenn ein Bediener mit Manipulation des Berührungssensors (103) auf dem auf dem ersten Bedienungspult befestigten Blatt eine der sichtbaren Anzeigen auswählt, ein Positionssignal, das die durch den Bediener ausgewählte Anzeige angibt, an das Steuermittel liefert und wobei das erste Steuermittel Daten entsprechend der durch den Bediener ausgewählten speziellen Anzeige von dem Festwertspeicher (86) mit der Adresse entsprechend dem Positionssignal ausliest.

10. Informationsspeichereinrichtung zur Verwendung mit dem Gerät nach einem der Ansprüche 1 bis 8 mit

einer dünnen Platte mit einer Mehrzahl von an Positionen ihrer Oberfläche aufgedruckten sichtbaren Anzeigen, einem Festwertspeicher (86), der mit der dünnen Platte physikalisch verbunden ist und der eine Mehrzahl von Informationspaketen mit vorbestimmten Daten und mit Adressen speichert, die Koordinaten von zweidimensionalen

Positionen auf der Oberfläche der dünnen Platte, auf der die jeweiligen sichtbaren Anzeigen aufgedruckt sind, entsprechen, und einem Verbindungsmittel (88), das den Festwertspeicher (86) mit dem Steuermittel des Gerätes elektrisch verbindet, wenn die Informationsspeichereinrichtung auf dem Bedienungspult des Gerätes derart plaziert wird, daß das Steuermittel des Gerätes Daten von der Informationsspeichereinrichtung entsprechend zu der durch den Bediener mittels des Positionserfassungsmittels des Gerätes ausgewählten speziellen sichtbaren Anzeige auslesen kann.

11. Informationsspeichereinrichtung zur Verwendung mit dem Gerät nach Anspruch 9 mit

einer dünnen Platte mit einer Mehrzahl von an Positionen ihrer Oberfläche aufgedruckten sichtbaren Anzeigen, einem Festwertspeicher (86), der mit der dünnen Platte physikalisch verbunden ist und der eine Mehrzahl von Informationspaketen mit vorbestimmten Daten und mit Adressen speichert, die Koordinaten von zweidimensionalen Positionen auf der Oberfläche der dünnen Platte, auf der die jeweiligen sichtbaren Anzeigen aufgedruckt sind, entsprechen, und einem Verbindungsmittel (88), das den Festwertspeicher (86) mit dem ersten Steuermittel des Gerätes elektrisch verbindet, wenn die Informationsspeichereinrichtung auf dem ersten Bedienungspult des Gerätes derart plaziert wird, daß das erste Steuermittel des Gerätes Daten von der Informationsspeichereinrichtung entsprechend zu der durch den Bediener mittels des Positionserfassungsmittels des Gerätes ausgewählten speziellen sichtbaren Anzeige auslesen kann.

12. Informationsspeichereinrichtung nach Anspruch 10 oder 11, gekennzeichnet durch eine Mehrzahl von in einem Buchformat zusammengebundenen dünnen Blättern, wobei jedes der dünnen Blätter eine Mehrzahl von an Positionen auf seiner Oberfläche aufgedruckten sichtbaren Anzeigen aufweist und wobei die Blätter Ausnehmungen (78) zum Ermitteln einer speziellen Seite der Blätter aufweisen.

Revendications

1. Dispositif à afficher une image vidéo sur un écran de présentation, comprenant:

un moyen détecteur de position (4) à un panneau planaire, où un dispositif de mémoire d'in-

formations (2) est monté de façon démontable, qui comprend un moyen capteur (6, 8) à fournir un signal de position, qui représente des positions bidimensionnelles sur ledit panneau planaire; et

un moyen de commande (18), qui répond audit signal de position, qui est fourni par ledit moyen détecteur de position;

ledit moyen de mémoire (2) comprenant: une plaque de feuille à une pluralité de marques visibles imprimées aux positions sur sa surface,

caractérisé en ce

que ledit moyen de commande (18) extrait des données dudit moyen de mémoire;

que ledit moyen de mémoire d'informations (2) comprend:

- une mémoire morte (86) en combinaison physique avec ladite plaque de feuille, qui met en mémoire une pluralité de paquets d'informations aux données prédéterminées, dont les adresses correspondent aux coordonnées desdites positions bidimensionnelles sur la surface de ladite plaque de feuille, sur laquelle lesdites marques visibles sont imprimées; et
- un moyen de raccordement (88), qui établit le raccord électrique entre ladite mémoire morte (86) et ledit moyen de commande (18), quand ledit moyen de mémoire d'information est placé sur ledit panneau planaire;

dans lequel ledit moyen détecteur de position (4) fournit un signal de position, qui représente la marque choisie par un opérateur, audit moyen de commande (18), quand l'opérateur choisit une desdites marques visuelles par manipulation sur la feuille placée sur ledit panneau planaire, et dans lequel ledit moyen de commande (18) extrait les données qui correspondent aux marques particulières choisies par l'opérateur, de ladite mémoire morte (86), dont l'adresse correspond audit signal de position.

2. Dispositif selon la revendication 1, qui comprend de plus des moyens (20) à fournir un signal vidéo pour l'affichage, sur ledit écran de présentation (26), d'une image qui correspond à la marque choisie par l'opérateur par référence aux paquets d'informations extraites dudit moyen de mémoire d'informations (2).

3. Dispositif selon la revendication 1 ou 2, dans lequel ledit moyen de mémoire d'informations (2) com-

prend une pluralité de plaques de feuille, reliées l'une à l'autre en format de livre, dont chacune porte une pluralité de marques visuelles, imprimées aux positions sur sa surface, et dans lequel ledit moyen détecteur de position (4) comprend un moyen capteur à discriminer les pages afin de déterminer une page particulière parmi la pluralité de feuilles.

4. Dispositif selon la revendication 2 ou 3, qui comprend de plus des éléments de commande par l'opérateur pour déplacer l'image sur ledit écran de présentation (26).

5. Dispositif selon une quelconque des revendications 1 à 4, dans lequel ledit moyen détecteur de position (14) comprend:

- un transmetteur électromagnétique (42);
- un arrangement en réseau (36) à une trame prédéterminée, qui est positionné près dudit panneau planaire et raccordé audit transmetteur; et
- un élément récepteur (44) apte à être positionné près dudit arrangement en réseau (36) afin de détecter un courant électromagnétique y induit.

6. Dispositif selon une quelconque des revendications 1 à 4, dans lequel ledit moyen détecteur de position (14) comprend:

- une suite d'émetteurs photoélectriques (52, 54) et détecteurs photoélectriques (56, 58), positionnés de façon à former un réseau optique de rayons lumineux au voisinage de la surface de ladite feuille placée sur ledit panneau planaire, dans lequel ledit moyen détecteur de position (14) détermine les coordonnées de tout rayon lumineux bloqué.

7. Dispositif selon une quelconque des revendications 1 à 4, dans lequel ledit moyen détecteur de position (14) comprend:

- un circuit transmetteur d'ultra-sons (70);
- un générateur d'ultra-sons (68) relié audit circuit transmetteur (70); et
- une suite de capteurs d'ultra-sons (66), qui sont appropriés à détecter les ultra-sons transmis par ledit générateur d'ultra-sons (68), dans lequel ledit moyen détecteur de position (14) détermine les coordonnées dudit générateur d'ultra-sons (68) en les dérivant des signaux reçus par lesdits capteurs (66).

8. Dispositif selon une quelconque des revendications 3 à 7, dans lequel ledit moyen à capteur discriminateur comprend une pluralité de photodétecteurs

(80), qui s'étendent le long d'une périphérie dudit format de livre, et dans lequel le nombre de photodétecteurs (80) activés représente une page particulière.

9. Dispositif à afficher une image vidéo sur un écran de présentation, comprenant:

un moyen détecteur de position (4) à un premier panneau, où un dispositif de mémoire d'informations est monté de façon démontable, et un capteur d'attouchement (103), qui est relié, de façon fonctionnelle, audit premier panneau; ledit moyen de mémoire d'informations comprenant: qui une plaque de feuille (104) à une pluralité de marques visibles imprimées aux positions sur sa surface,

caractérisé en ce

que le dispositif à afficher une image vidéo sur un écran de présentation (107) comprend:

un deuxième panneau (106) disposé à une position séparée dudit premier panneau, dans lequel ledit capteur d'attouchement (103) est relié, de façon fonctionnelle, audit deuxième panneau (106),

des moyens à engendrer des signaux de position, qui représentent des positions bidimensionnelles sur lesdits premier et deuxième panneaux (106) en réponse au placement dudit capteur d'attouchement (103) sur ces panneaux par l'opérateur,

un premier moyen de commande (18, 20), relié de façon fonctionnelle audit premier panneau, à extraire des données dudit moyen de mémoire, en réponse à un signal de position, qui est fourni par ledit moyen détecteur de position, et à sortir, à la base des données extraites, un signal vidéo afin d'afficher une image vidéo sur ledit écran de présentation (107);

un deuxième moyen de commande, relié de façon fonctionnelle audit deuxième panneau, à fournir un changement à ladite image affichée, en réponse à un signal de position fourni par ledit moyen détecteur de position en réponse au placement dudit capteur d'attouchement (103) par l'opérateur sur une position choisie dudit deuxième panneau,

et en ce que ledit moyen de mémoire d'informations comprend:

une mémoire morte (86) en combinaison physique avec ladite plaque de feuille, qui met en mémoire une pluralité de paquets d'informations aux données prédéterminées, dont les

adresses correspondent aux coordonnées desdites positions bidimensionnelles sur la surface de ladite plaque de feuille, sur laquelle lesdites marques visibles respectives sont imprimées, et

un moyen de raccordement (88), qui établit le raccord électrique entre ladite mémoire morte (86) et ledit moyen de commande (18) dudit dispositif, quand ledit moyen de mémoire d'informations est placé sur ledit premier panneau planaire dudit dispositif;

dans lequel, quand un opérateur choisit une desdites marques visuelles en manipulant audit capteur d'attouchement (103) sur la feuille placée sur ledit premier panneau planaire, ledit moyen détecteur de position (4) fournit un signal de position, qui représente la marque choisie par l'opérateur audit moyen de commande, pendant que ledit premier moyen de commande extrait des données, qui correspondent auxdites marques, qui sont choisies par l'opérateur, de ladite mémoire morte (86), dont l'adresse correspond audit signal de position.

10. Dispositif de mémoire d'informations, à l'emploi dans le dispositif selon une quelconque des revendications 1 à 8, comprenant:

une plaque de feuille à une pluralité de marques visibles imprimées aux positions sur sa surface,

une mémoire morte (86) en combinaison physique avec ladite plaque de feuille, qui met en mémoire une pluralité de paquets d'informations aux données prédéterminées, dont les adresses correspondent aux coordonnées desdites positions bidimensionnelles sur la surface de ladite plaque de feuille, sur laquelle lesdites marques visibles respectives sont imprimées; et

- un moyen de raccordement (88), qui établit le raccord électrique entre ladite mémoire morte (86) et ledit moyen de commande dudit dispositif, quand ledit moyen de mémoire d'informations est placé sur ledit panneau planaire dudit dispositif, de façon que les moyens de commande dudit dispositif puissent extraire des données dudit moyen de mémoire d'informations, qui correspondent marques visuelles particulières, qui sont choisies par l'opérateur moyennant moyen détecteur de position dudit dispositif.

11. Dispositif de mémoire d'informations, à l'emploi dans le dispositif selon la revendication 9, comprenant:

une plaque de feuille à une pluralité de marques visibles imprimées aux positions sur sa surface,

une mémoire morte (86) en combinaison physique avec ladite plaque de feuille, qui met en mémoire une pluralité de paquets d'informations aux données prédéterminées, dont les adresses correspondent aux coordonnées desdites positions bidimensionnelles sur la surface de ladite plaque de feuille, sur laquelle lesdites marques visibles respectives sont imprimées; et

- un moyen de raccordement (88), qui établit le raccord électrique entre ladite mémoire morte (86) et ledit premier moyen de commande dudit dispositif, quand ledit moyen de mémoire d'informations est placé sur ledit premier panneau planaire dudit dispositif, de façon que ledit premier moyen de commande dudit dispositif puisse extraire des données dudit moyen de mémoire d'informations, qui correspondent auxdites marques visuelles particulières, qui sont choisies par l'opérateur moyennant ledit moyen détecteur de position dudit dispositif.

12. Dispositif de mémoire d'informations selon la revendication 10 ou 11, comprenant une pluralité de plaques de feuille, reliées l'une à l'autre en format de livre, dont chacune porte une pluralité de marques visuelles, imprimées aux positions sur sa surface, et dans lequel lesdites feuilles présentent des entailles (78) pour la détermination d'une page particulière parmi lesdites feuilles.

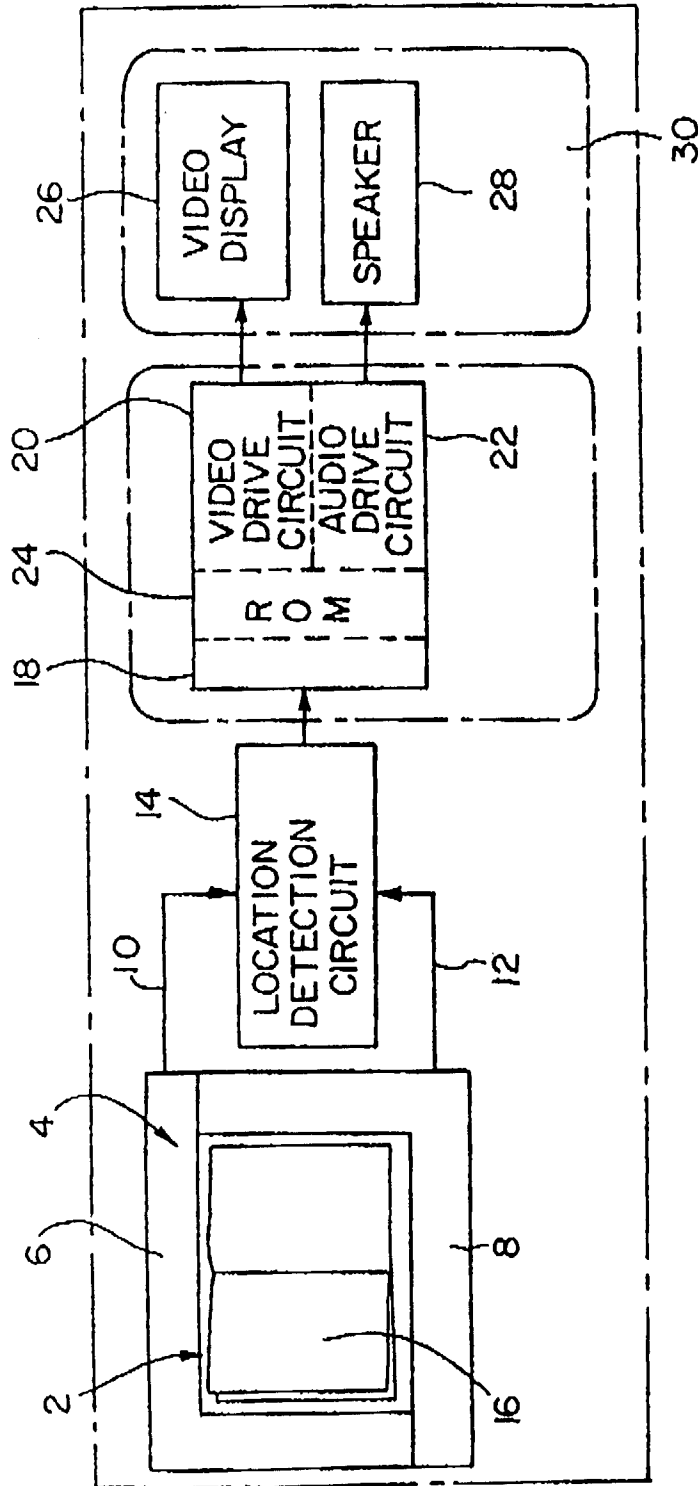


FIG. 1

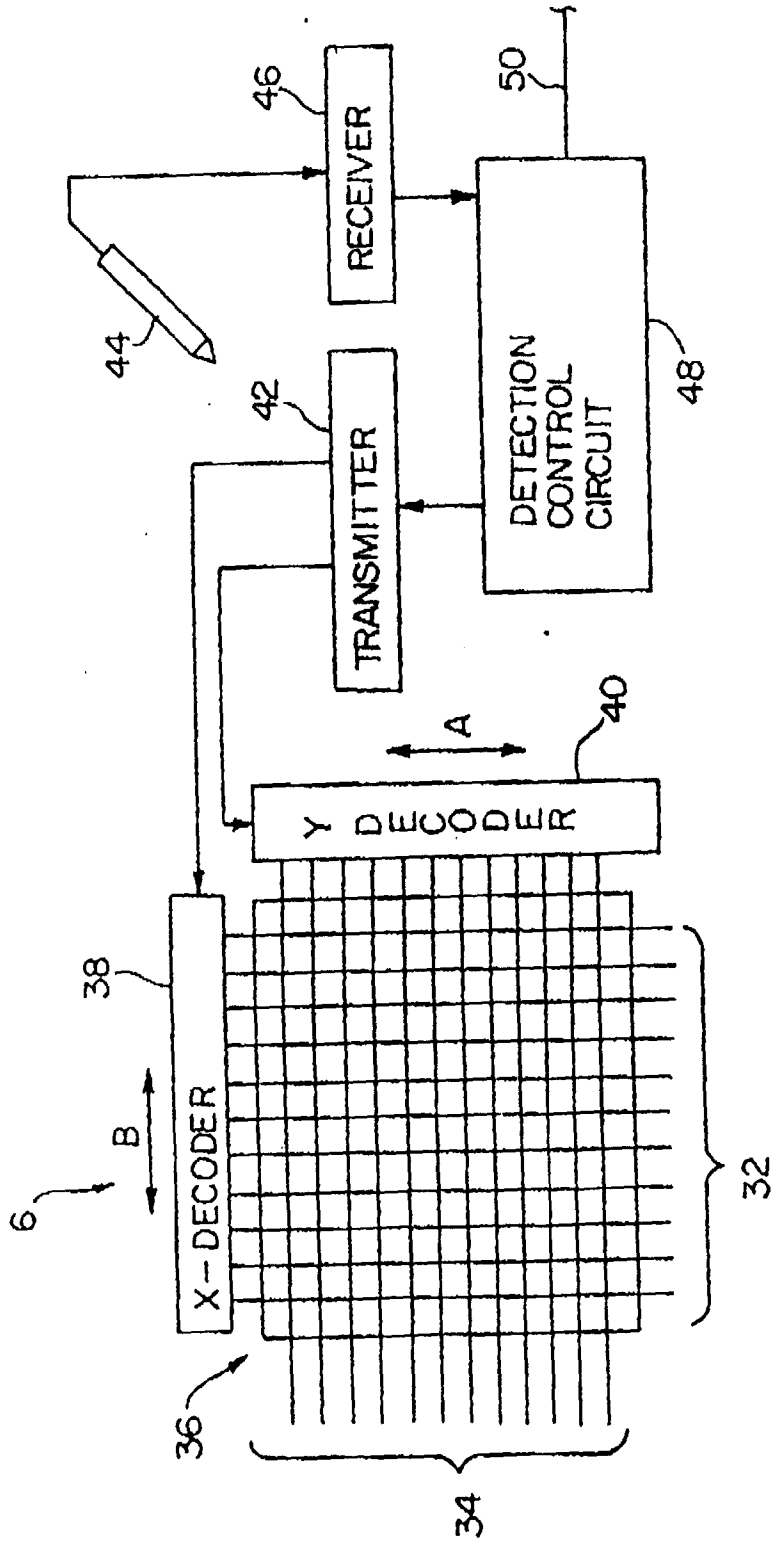


FIG. 2

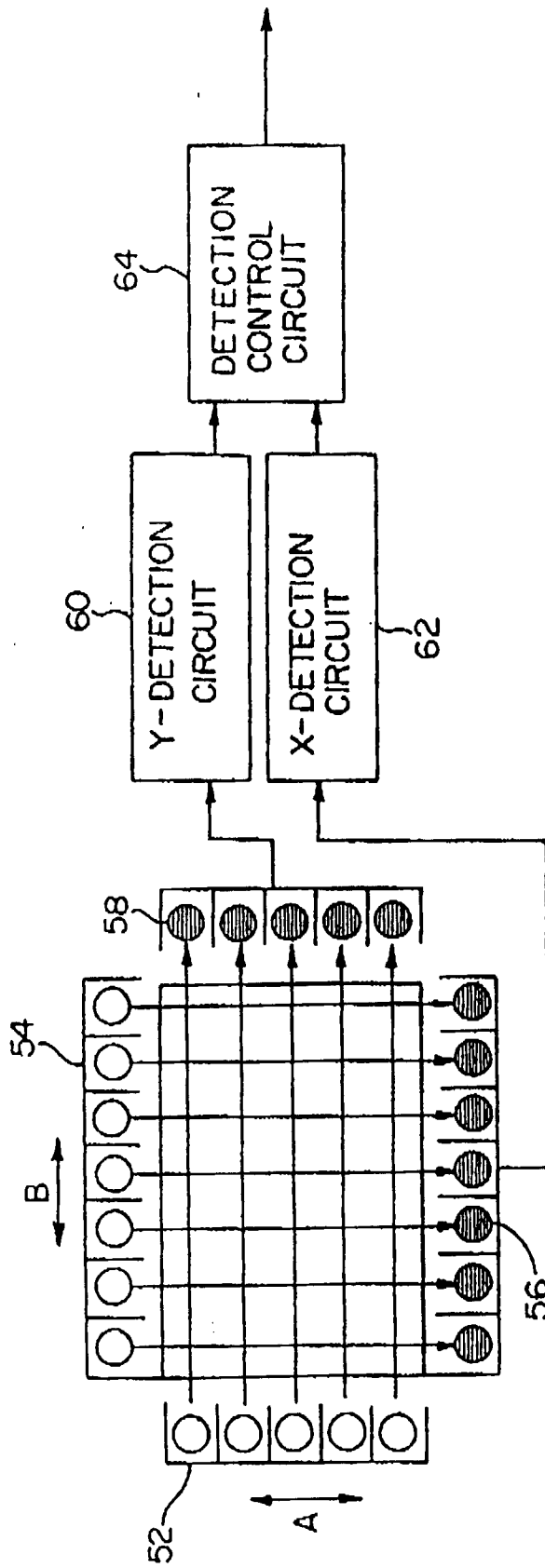


FIG. 3

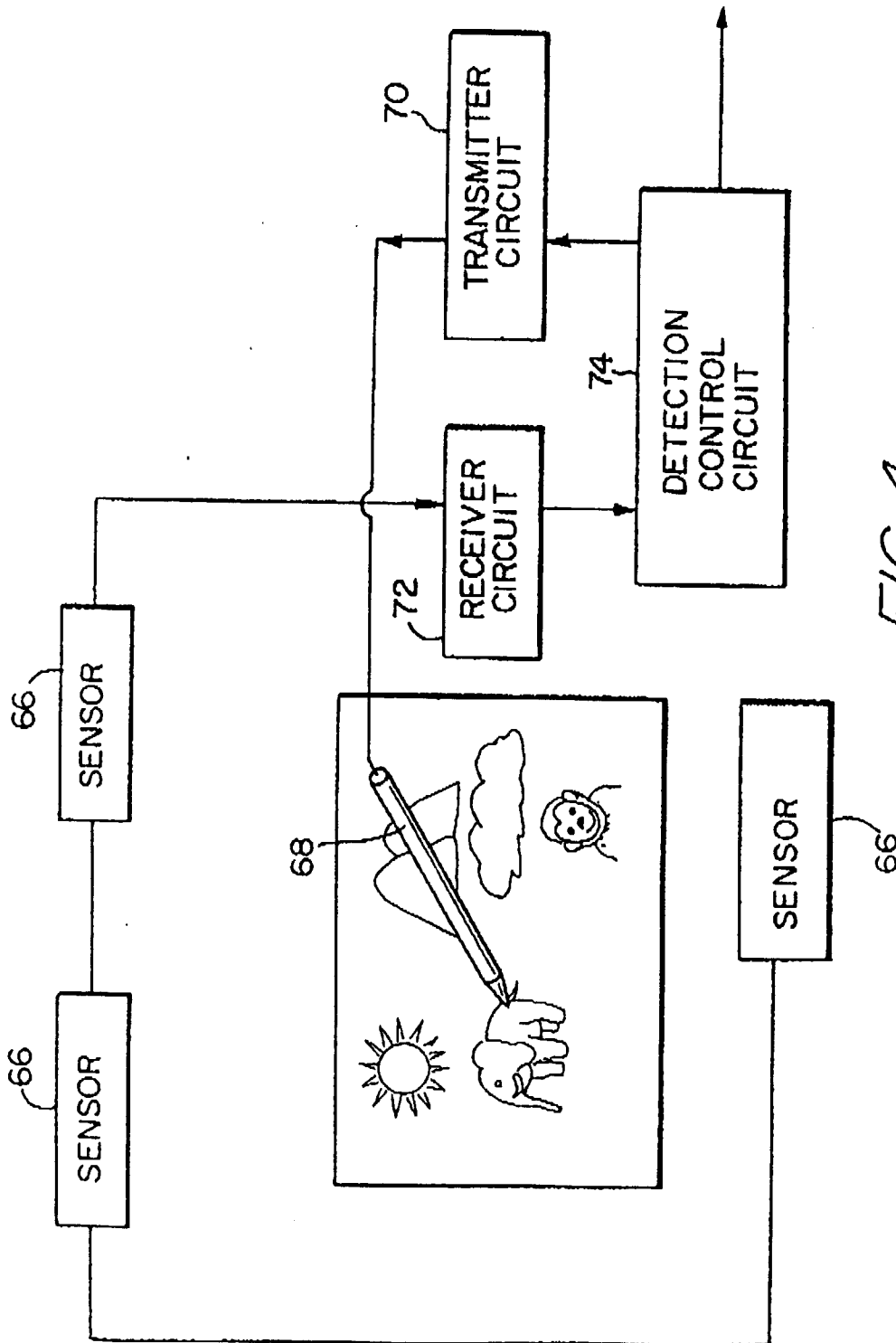


FIG. 4

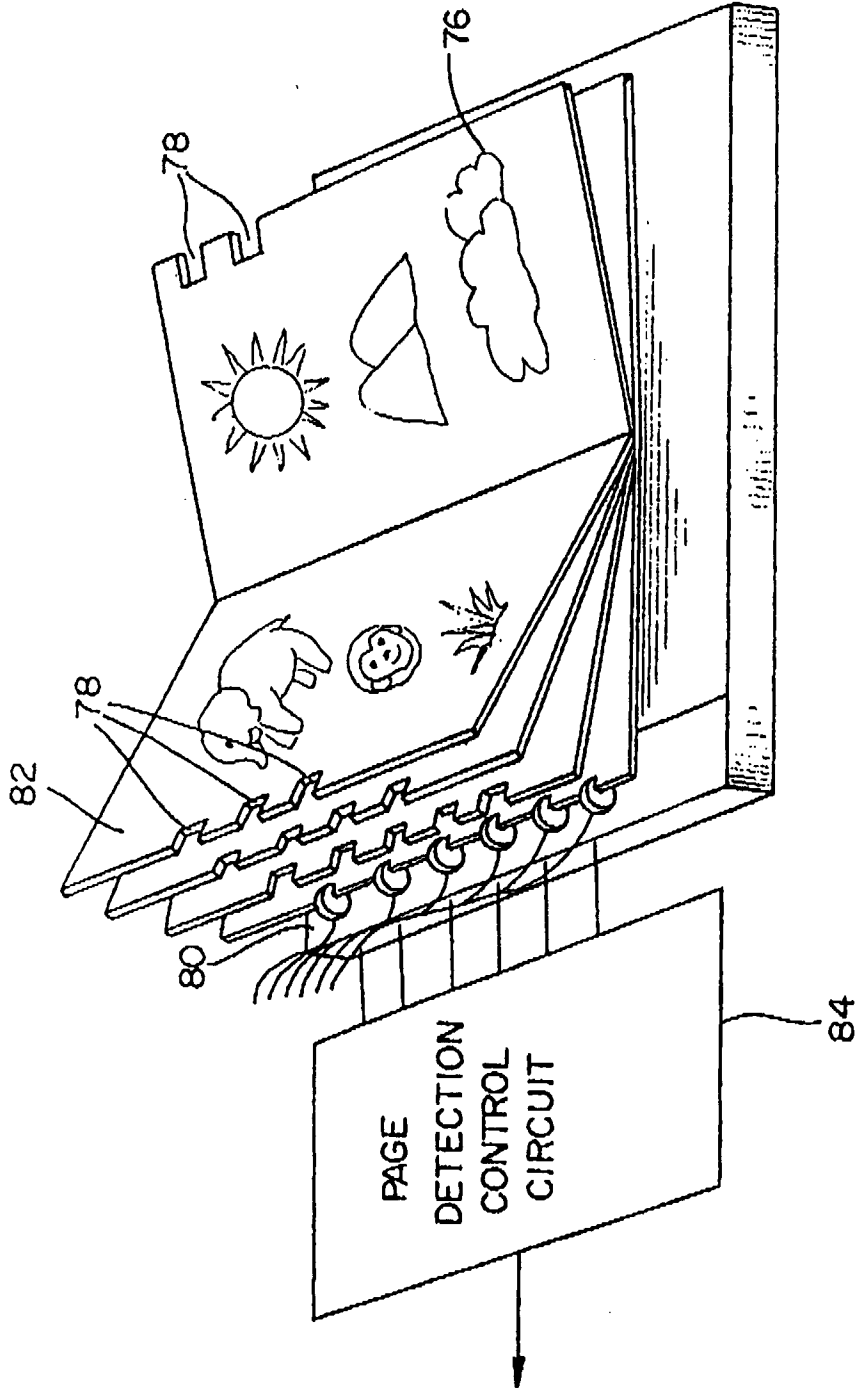


FIG. 5

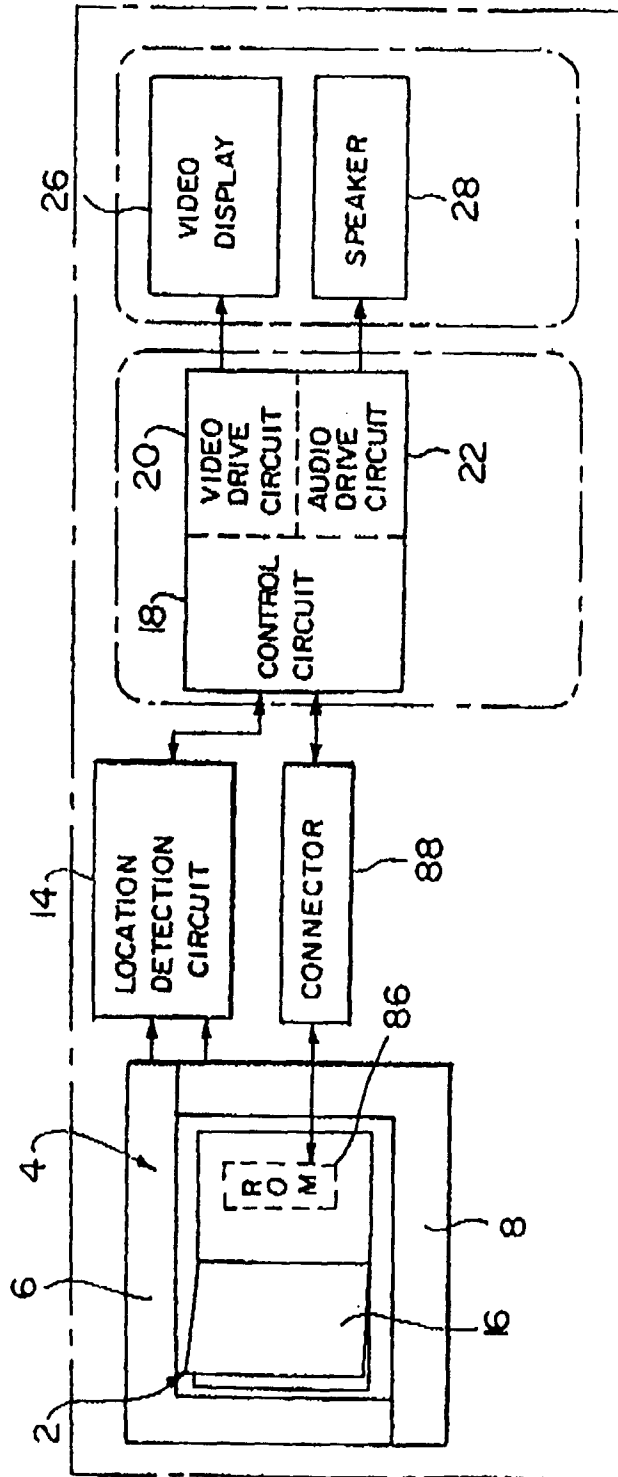


FIG. 6

FIG. 7

