THE JOINT EXAMINATION BOARD

PAPER P6

INFRINGEMENT AND VALIDITY OF UNITED KINGDOM PATENTS

10th NOVEMBER 1999

10.00 a.m. – 2.00 p.m.

Please read the following instructions carefully. This is a **FOUR HOUR** paper.

1. Write on one side of the paper only using **BLACK OR DARK BLUE** ink. You must write your examination number and designation of the paper in the top right hand comer of each sheet. You must not state your name anywhere in the answer.

2. **NO** printed matter or other written material may be taken into the examination room.

3. Answers **MUST** be legible. If the examiners cannot read a candidate's answer no marks will be awarded.

4. Candidates are reminded that marks are awarded more for the points selected for discussion and the reasoning displayed than conclusions reached.

Document checklist:-

Client's letter – 2 pages, 1 sheet drawings;
United Kingdom Patent 2 500 000 - 5 pages specification plus 1 sheet drawings;
United States Patent 3,700,000 – 3 pages specification plus one sheet of drawings;
and
Extracts from United States Patent 4,500,000 -2 pages specification plus one sheet of drawings.

Client's Letter

Gill Bates is an established Client who organises a group of computer professionals which devises, installs and maintains computer systems for small businesses. Today, November 1 Oth, you receive the following letter from Gill Bates.

"Earlier this year I was planning for the retraining of our clients' staff to cope with the Y2K problem (the so-called Millennium Bug resulting from only the last two digits being used to identify a year) and the arrival of the Euro currency. I realised that we would need to retrain people in groups to meet the deadline but the computer VDU display is too small for a group to see comfortably. I therefore looked for an alternative. I carried out a computer search through various databases, found United States Patent Specification 3 700 000 and concluded that the frame described in this patent could be used to support a small liquid crystal display (LCD) panel above the platform of an overhead projector (OHP) to produce a larger projected display. I recalled that you had said that once expired a patent cannot be infringed. As United States Patent Specification 3 700 000 was published in 1973 it would have expired by 1990 so the contents would free for us to use. One of our clients operates a metal-working machine shop and produced for us thirty of the frames to hold the display panel, but closely following the design of United States Patent Specification 3 700 000. I enclose a sketch showing a typical display panel in use with a frame. (The OHP is not shown in full.)

Our clients have been very impressed with our projector display and we believe there to be a large, ongoing market which we are considering exploiting into and beyond year 2000.

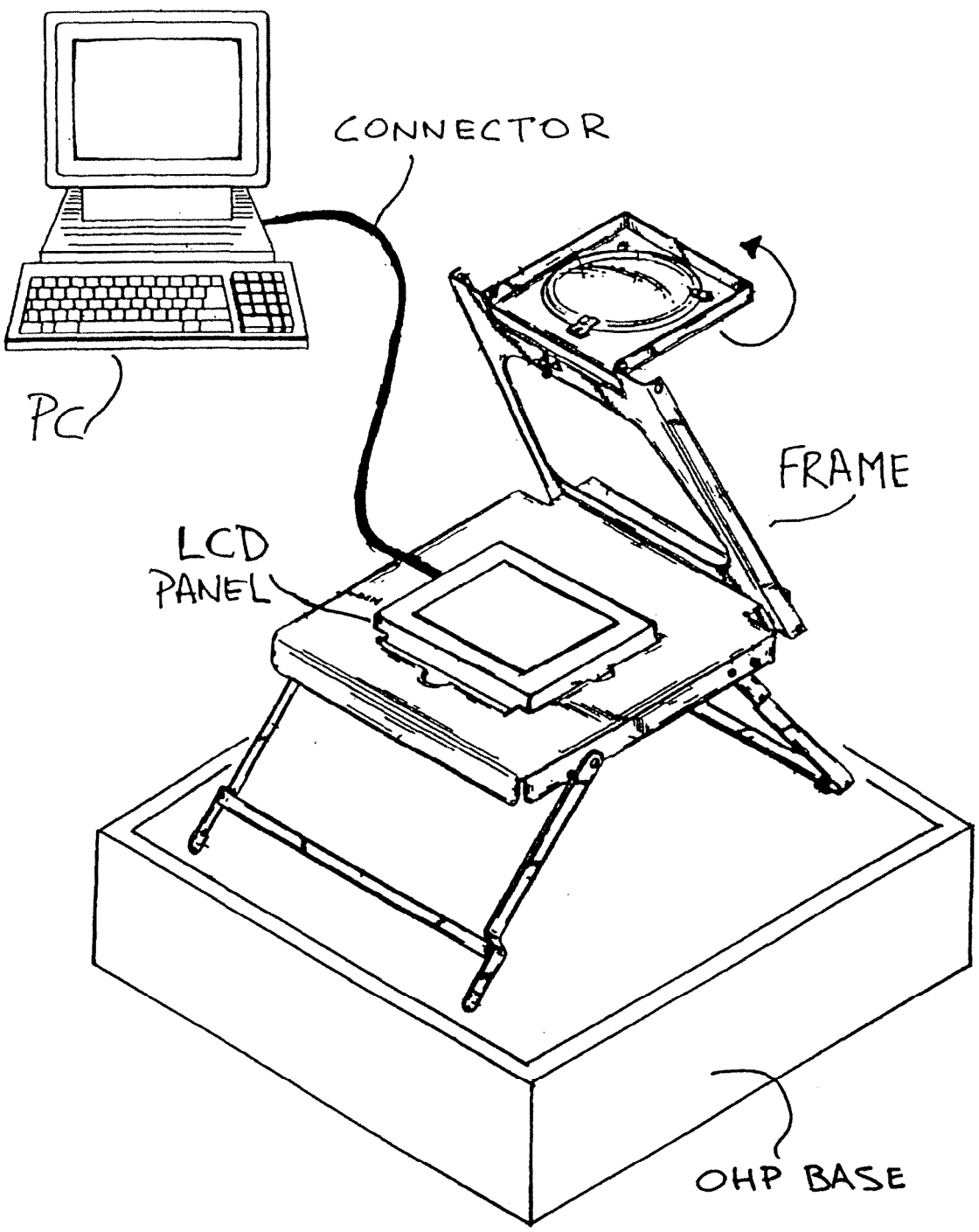
We are now using the frames and display panels extensively as this period approaching the start of year 2000 is when our clients most need our help and we must try to use the scarce resource of the professionals in our group as efficiently as possible by each professional retraining clients' staff in the largest possible groups. You can imagine my dismay when I received the enclosed Patent Specification United Kingdom 2 500 000 this morning by Registered Post and read the accompanying letter stating that this Patent was relevant to our frames. I recall that you told me that a Patentee can get an injunction to stop infringement immediately. You can imagine the disastrous effect this would have on our business at this time.

I enclose a copy of United States Patent Specification 3 700 000. Please telephone me today."

-- oOo --

You do a further search and find United States Patent Specification 4 500 000.

Prepare notes on which you would base your advice to Gill Bates.



United Kingdom Patent 2 500

Application Date: April 10, 1987 Granted: September 20, 199 1

DISPLAY DEMONSTRATION SYSTEM

TECHNICAL FIELD OF THE INVENTION

This invention relates in general to a display demonstration system for providing an enlarged projected image of the display of an electronic data processing apparatus such as from the monitor/display of a personal computer/calculator, hereinafter referred to as a computing device, for viewing in a classroom or other training environment or the like.

BACKGROUND OF THE INVENTION

In many situations it is desirable to project the display of a computing device onto a large screen for group viewing and for a teacher to operate the apparatus while the display is projected. Present day solutions, however, have not been effective in providing a low cost solution which is easily operated by a speaker/teacher.

A known calculator has an opening in its case such that light may be transmitted through the liquid crystal display (LCD) itself when placed upon the base of an overhead projector. Thus, the display acts as a small transparency and its image may be projected to a large screen. For personal computers an LCD unit, known as a “pallet“, of about the same size as a typical transparency used on an overhead projector is placed on the overhead projector base and is driven by the computer.

For a calculator this approach has significant problems. The small size of the display gives a projected image generally too small to be comfortably viewed by the audience. Heat from the base of the overhead projector affects the LCD, eventually making the entire display opaque. The entire calculator sits on the base of the overhead projector so the speaker must stare into the light emitted by the base while operating the calculator. For a personal

computer the size of the LCD in the pallet and the additional hardware necessary to cool the display results in a high system cost.

Thus a need has arisen for a display means usable remotely with an overhead projector to provide a large projected image at low cost, and which is less susceptible to heat related performance degradation than prior art solutions.

SUMMARY OF THE INVENTION

In accordance with the present invention as set forth in claim 1, a display demonstration system is provided for projecting calculator and computer displays onto a large screen for enlarging an image, especially for group viewing, which substantially eliminates or prevents the disadvantages associated with prior display devices.

The present invention provides a display which may be coupled to a computing device to receive display data from the computing device and through which light may be transmitted. A platform is operable to elevate the display to a predetermined distance from the base of the overhead projector. A lens assembly is positioned between the display and the overhead lens of the overhead projector such that an enlarged image of the display may be projected.

The present invention provides significant advantages over the prior art. First, the invention provides a low cost solution which is less susceptible to heat related performance degradation than the prior art. In order to achieve a larger projected image, an additional lens is coupled to the platform. The display may be operated from a remote location, enhancing its use in the classroom or lecture room. Furthermore, temperature compensation circuitry may be provided in the display to minimise contrast changes in the projected image. Also, a

separate contrast control may be provided in the display to optimise the projected image.

BRIEF DESCRIPTION OF THE DRAWING

The present invention is now described with reference to the accompanying drawing which illustrates a perspective view of a first embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

An overhead projector 10 comprises a base unit 12 which projects light upwards through a base lens 14. The light is projected through an overhead lens assembly 16 which includes one or more lenses and a plurality of mirrors to project the light to a screen (not shown). The lens assembly 16 is slidably engaged on an arm 18. Overhead projectors of this type as just described are manufactured and sold by a number of companies.

A computing device 20 shown as a hand-held calculator including a local liquid crystal display (LCD) 21 (preferably a graphics display), is coupled to a remote display 22, which is also an LCD, by a cable 24 of length up to three metres. The remote display includes a contrast control knob 25. The remote display 22 is held above the base lens 14 on a platform 26 having legs 28. A lens 30 is positioned between the remote display 22 and the overhead lens assembly 16. A heat shield 31 is placed on top of the base lens 14. The heat shield 31 is preferably a white, or light coloured, foam board having a window 32 formed therein such that the remote display 22 is shielded from excess heat from the base unit 12, except for the light needed to project the display. A light coloured heat shield will avoid heat retention which could damage the base lens 14.

The platform 26, legs 28 and lens 30 may be provided in a single unit which can be folded flat for transport.

In operation, the remote display 22 generates the same image as is present on the computing device 20. Because the remote display 22 is elevated from the base unit 12, it is subjected to much less heat than a display lying on the base lens 14. The heat shield 31 further reduces the amount of heat received by the remote display 22. The lens 30 magnifies the image of the remote display 22.

The calculator 20 can be operated normally by the teacher, who views the LCD 21 on the calculator while the remote display 22 replicates the image on its LCD 34 for display to the audience. Thus the speaker/teacher need not face the remote display or the screen image but may address the audience directly while performing calculations on the calculator 20.

The present invention also solves the problems of heat degradation of the display through use of the elevated platform, the temperature compensation and the heat shield, permitting use for extended periods of time without noticeable deterioration to the enlarged image of the display.

In an alternative embodiment, the remote display 22 may be mounted permanently on, or made an integral part of, the platform so that the cable from a calculator or personal computer may simply be attached thereto. The platform may also provide support for the projection of small transparencies such as slides.

The aforementioned advantages regarding heat degradation would further reduce the cost of the display by eliminating the need for costly cooling devices.

Although the present invention has been described in detail, it should be understood that various changes, substitutions and alterations can be made herein without departing from the spirit and scope of the invention as defined by the appended claims.

United Kingdom Patent 2 500

Application Date: April 10, 1987 Granted: September 20, 1991

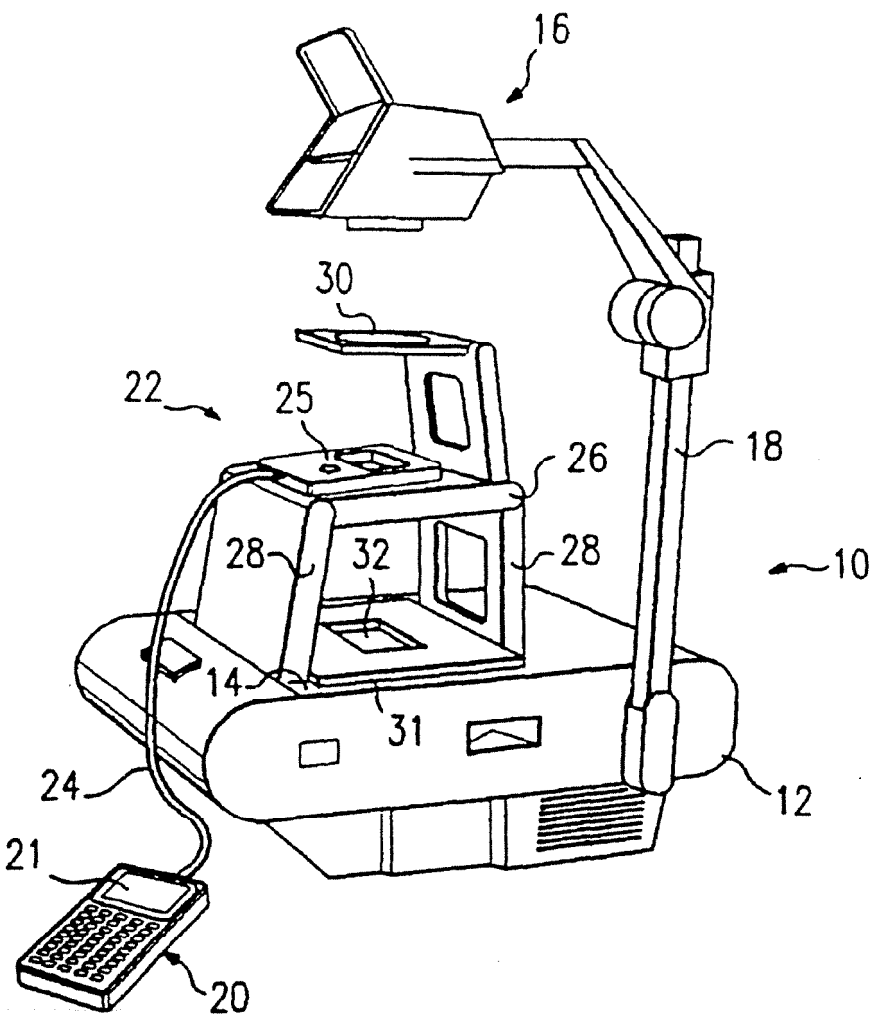
CLAIMS:

1. Apparatus for projecting an image onto a display surface or the like, the apparatus comprising an image projector of the type hereinbefore described, a support having a platform which can be mounted in spaced relationship on the image projector, an electronic data processing apparatus and display means associated with the electronic data processing apparatus, the display means including a display screen which can replicate any image produced by the data processing apparatus, whereby, the display means being provided on the platform, an enlarged image of the display of the electronic data processing apparatus is projected onto the display surface for viewing.

2. Apparatus as set forth in claim 1, further including a heat shield plate provided on the top surface of said image projector, said heat shield plate having a window therethrough in registration with the base lens in the top surface of said base housing and the light source being disposed in said base housing.

3. Apparatus as set forth in either one of claims 1 and 2, wherein said display screen comprises a liquid crystal display.

4. A remote display unit for use in displaying an enlarged projected image of a computer screen or handheld calculator, the unit comprising a support for mounting on an upper surface of a base housing of an overhead projector, and spacing means which serve to position the support in spaced relationship to said upper surface, so that the remote display device is positioned above a light source of the overhead projector.



United States Patent 3,700,

Filed : May 26, 1971 Issued: March 1, 1973

FOLDABLE TRANSPARENCY ENLARGER FOR OVERHEAD PROJECTOR

The present invention is directed to overhead projectors and specifically to a transparency enlarger therefor.

Overhead projectors in general have a top surface with a glass plate through which light travels along an optical path to an overhead lens so that a transparency placed on the glass plate will be projected onto a remote screen.

An instant picture film is now available which produces a transparency. The transparency can then be placed into a mask or holder in a conventional manner.

However a problem in viewing these transparencies through a conventional overhead projector is that the transparency is only three inches by four inches and white light shows around the sides of the transparency when projected on a screen.

The main object of the present invention is to provide an enlarger for such a transparency so that when placed on an overhead projector top surface, the transparency will be projected on a remote screen without the undesirable light around the sides of the transparency.

These and other objects of the present invention are carried out by a portable foldable table-like structure which sits directly on the glass projection area of an overhead projector and has a recess in the table to receive a transparency.

These and other objects and advantages of the present invention will be seen from the following detailed description thereof taken with the single Figure, which is a perspective view of the device in an almost fully unfolded condition.

Referring now to the drawing, the device 1 in accordance with the present invention is foldable between the collapsed state and the assembled state as required to be placed on an overhead projector.

The device 1 includes a base or table 10 which has a planar top surface 11, side walls 15, 16 and 17 and a rear portion 18. Centrally of the top surface 11 is an indentation 12 for receiving a transparency. Finger spaces 13 facilitate the removal of the transparency after it is in place. The central part of the indentation 12 has a mask or aperture 14 through which light passes from the top surface of an overhead projector and through the transparency. Preferably the indentation or recess 12 is sized to receive a transparency.

Connected to side walls 16 and 17 of base 10 are leg means 20 including a first pair of leg members 21, 22 joined by a cross member 23 and a second pair of leg members 27, 27' (not shown) joined by cross member 28.

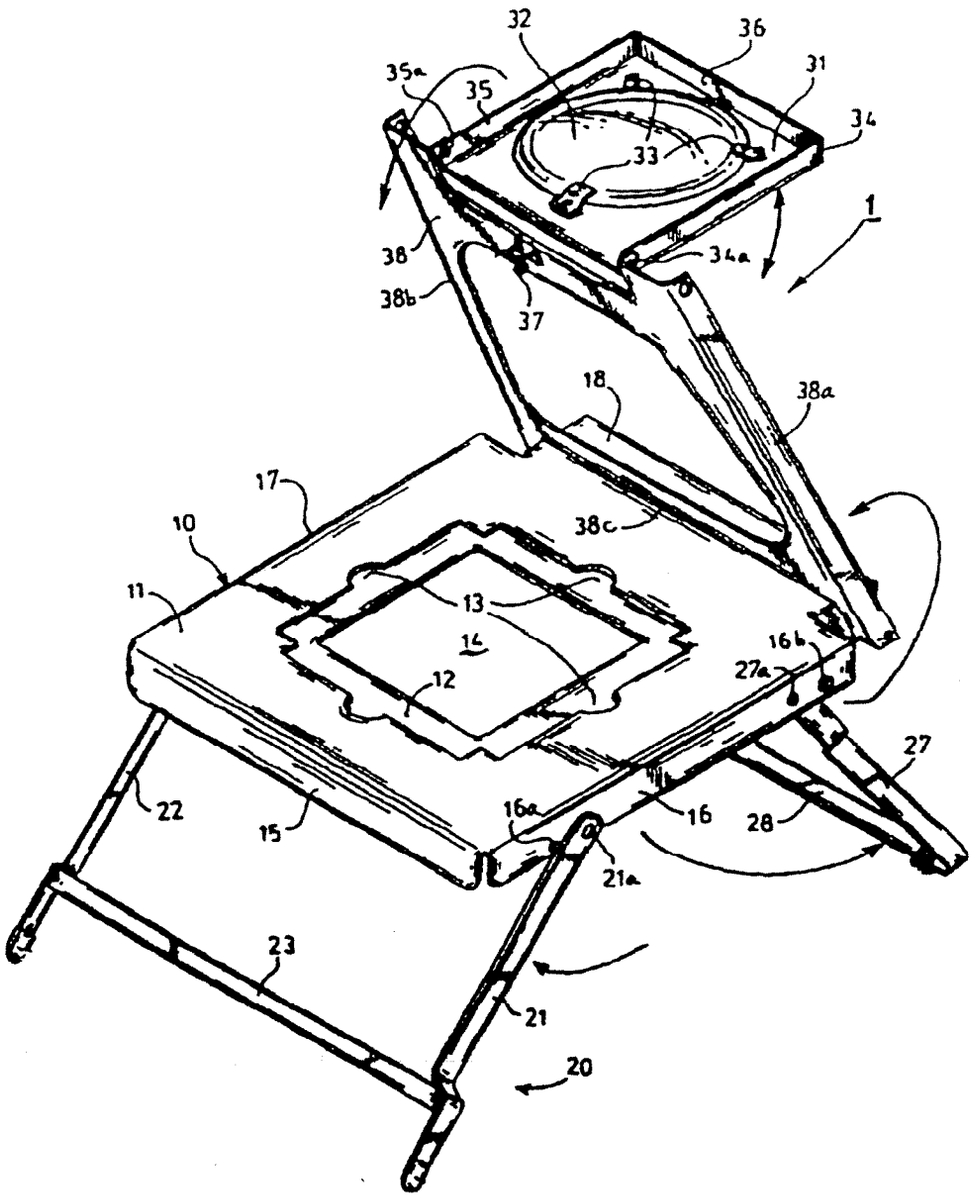
Leg members 21 and 22 are pivotally connected at pivot axes 21a, 22a (not shown) for movement from the collapsed position (not shown) to the unfolded position shown in the drawing. Leg members 27, 27' move similarly about pivot axes 27a and 27b (not shown) The extent of the pivoting movement is limited by stop members 16a, 16b and 17a, 17b (not shown).

A focusing lens 32 is held by members 33 in a planar lens holder 3 1 having side walls 34 and 35 and a front wall 36. The holder 31 is pivotal about pivot axes 34a and 35a on connecting member 38 which includes side walls 38a and 38b. Connecting member 38 is itself pivotally mounted on base 10. The pivotable movement of member 38 from within base 10 is limited by the impact of edge 38c against end portion 18 and that of holder 3 1 by stop screw 37.

The unit is carried around in the fully collapsed condition. For use the leg members 21, 22 are first pivoted downwardly to engage the respective stops. Thereafter, the connecting member 38 along with lens holding member 31 are pivoted upwardly. The leg members 27, 27' may then be unfolded. Finally, the lens holding member 31 is pivoted to the position above transparency indentation 12 so that the entire unit can be placed on the top of an overhead projector and light can pass from the overhead projector through indentation 12 and through a transparency placed therein, through the lens 32 and into the overhead lens of the overhead projector. Lens 32 ensures the proper focusing of the image of the transparency on the OHP lens, whereas the predetermined pivoting movements of the leg means set the proper distance of the transparency from the top surface of the overhead projector for the particular lens 32 that is used.

The support may be placed in the collapsed state or condition by reversing the above procedure.

The specification is by way of illustration and not limitation, and various modifications and changes may be made without departing from the scope and spirit of the present invention.



Extracts from United States Patent 4,500,000
Filed: August **20,** 1981 Issued: May 10, 1984

GRAPHIC IMAGER UTILIZING A LIQUID CRYSTAL DISPLAY

BACKGROUND OF THE INVENTION

The present invention relates generally to graphic imagers, and more particularly to a liquid crystal computer image presentation system.

Various systems have been utilized to present personal computer (PC)-generated graphics. The liquid crystal display-type devices utilize electronics to convert display information generated by the computer into signals usable with liquid crystal displays. A standard overhead projector may then be combined with the liquid crystal display to present the image created thereby.

The system according to the present invention is able to project a representation of text or graphics viewable on a PC display screen. The system, in effect, transforms the data that appears on a computer monitor into an electronic transparency. When placed on an overhead projector, the data and/or graphics generated by the computer can be simultaneously projected onto any wall or screen. No additional hardware or software is required.

In view of the foregoing, an object of the present invention is to provide a liquid crystal computer image presentation system.

BRIEF DESCRIPTION OF THE DRAWING

The present invention will be described in more detail hereinafter in conjunction with the drawing in which the single Figure is a schematic representation of the system of the present invention utilized with a computer and an overhead projector.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawing this shows the system of the present invention, represented generally by reference numeral 10, as utilized with a personal computer (PC) 12 and a standard overhead projector 14. The system includes a liquid crystal display (LCD) palette or panel 16, an interface 18 and a remote control unit 20. Palette 16 and remote control unit 20 are connected to appropriate circuitry on interface 18. The interface tits into

any full-sized expansion slot of a PC. Remote control unit 20 may be connected to the interface by a cable. The LCD panel 16 has a permanently attached cable that electrically connects the panel to interface 18. The panel 16 is adapted to be positioned on the transparent or translucent stage 22 of projector 14.

As is known, the projector includes a base housing 24 and in the housing a white light source 26, such as an incandescent light. Upward from housing 24 is a post 27 which supports an optical system 28 that includes a reflector for reflecting the image produced on stage 22 onto a wall or screen. The height of the optical system 28 may be adjustable by means 30 to focus the image on a wall or screen.

Thus, when panel 16 is placed on stage 22, the image or information produced by the LCD panel is projected and displayed by means of the overhead projector. LCD panel 16 includes a liquid crystal cell, represented generally by reference numeral 36. The panel housing 34 is opaque and of strong materials to protect the internal components and has non-slip rubber feet (not shown) for preventing the panel from sliding off the surface of stage 22 of the projector. Palette 16 has a built in cooling system of a fan and a series of ventilation grids (both not shown) to produce a fresh air flow across cell 36 to maintain an even display temperature.

Liquid crystal cell 36 is contained within optically transparent glass windows in the front and back surfaces of the housing 34. The front surface of the panel is the side of the panel that may be observed by an observer when the panel is disposed on surface 22 of the projector.