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(54) **AN OVERHEAD PROJECTOR FOR USE IN AN AUDIO/VISUAL PRESENTATION**

TAGESLICHTPROJEKTOR ZUR VERWENDUNG BEI EINER AUDIOVISUELLEN PRÄSENTATION
RETROPROJECTEUR DESTINE A UNE PRESENTATION AUDIOVISUELLE

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Description

FIELD OF THE INVENTION

[0001] The present invention relates generally to the field of clocks and timers. More specifically, the present invention relates to a timing device disposed within an overhead projector that aids a presenter and/or audio-visual personnel in tracking the elapsed time of a presentation.

BACKGROUND OF THE INVENTION

[0002] There are many conventional devices used for displaying information to an audience. Examples of an audience may include a group of students seated in a classroom, a group of business people at a conference, and participants connected to a conference via video conferencing equipment. Information presented to the students and other audiences, perhaps by a professor or a guest speaker, may be presented using a projector, such as an overhead projector or a slide projector. Information presented to an audience may also be presented using a personal computer, such as a laptop computer connected to a display projection device.

[0003] Conventional timing devices, such as clocks and stopwatches, are well known. In a typical classroom environment, there is typically a clock located on one of the classroom walls that displays the time of day. However, the clock typically does not possess stopwatchtype functions, and may not be in the same line of sight as the projector screen, making it inconvenient to look at the clock while maintaining focus on the subject matter of the presentation. Also, a presenter is not able to control the timing functions of a wall clock. There may be occasions during a presentation when it would be desirable for a speaker to have control of timing functions, such as during an experiment, an exam, or in tracking the total elapsed time of a presentation.

[0004] Video conferencing is typically a costly service. Displaying a timer to each conference participant would aid in the tracking of the total time of the video conference so as to make participants aware of the cost of the conference. Displaying the elapsed time of a video conference to all participants also aids in reminding the participants of how long they have been involved in a conference, in case they have a schedule to maintain. Since participants may become very involved in a conference and may lose track of the time, displaying the time to each participant on their individual screen is an effective way of providing a constant reminder.

[0005] A conventional time tracking approach is provided in U. S. Patent No. 5,590, 944, in which a portable electronic device having a transparent liquid crystal display is described. The timing device includes a plastic casing, foldable legs, and is placed onto the surface of a projector where light passes through the device and displays LCD numerals onto a screen. A disadvantage

of the timer of the '944 patent is that it is not connected to a projector and may be easily lost, separated, or dropped from the projector surface. Since the device of the '944 patent is not integrated into the projector, it must also be supplied as a separate piece of equipment. Another disadvantage of the '944 timer is that it must be placed onto a flat, horizontal surface, such as that of an overhead projector. Many conventional projectors, such as a slide projector, do not possess a flat horizontal surface, making the conventional timer of the '944 patent impossible to use. An additional disadvantage of the '944 timer is that it interferes with the working space of an overhead projector surface, making it troublesome for a presenter to switch transparencies on the overhead projector without knocking the '944 timer out of place or even off of the projector surface onto the floor, where it may become damaged.

[0006] A second timer approach is provided in U. S. Patent No. 5,905, 694, in which a timing device for coordinating a presentation includes a master timer with a timing initiator, a programmable master sensory alarm responsive to the sequencer, a master alarm silencer, and a communication transmitter responsive to at least one of the timing initiator and the master sequencer. The device of the '694 patent involves a low power radio signal transmitted by the communication transmitter. The timing device of the '694 patent is used for coordinating the timing of a presentation, but does not include a time display that may be displayed to the audience. The device involves sending a signal from a master controller to a slave timer that alerts a speaker of a time limit.

[0007] Document DE 200 19 177 U (DERKSEN) -25 January 2001- generally discloses a time tracking device incorporated into the housing of a projector and having a transparent device display positioned such that light from within the projector can pass through and project a readout of the device display; a control pad for the device and a power source for the device and the control.

[0008] Document EP 0 694 803 A (MURAKAMI KAI-MEIDO) - 31 January 1996-discloses a manuscript display apparatus includes a main body having a light emitting body housed therein, a translucent diffusion plate arranged on top of the main body to diffuse light emitted from the light emitting body, a support portion rotatably supported with respect to the main body, a half mirror supported at the tip end of the support portion and a time display means for displaying a time display image as a virtual image in the half mirror.

[0009] It is further desirable to have a device that allows a presenter of an audio/visual presentation to track the elapsed time of a presentation. It is also desirable to provide a time tracking device in which the presenter can start, stop, and pause the time tracking device in a simple manner, without taking time away from a presentation. Such a device would be included within a projector device, thus eliminating the need for a presenter to supply such a device for a presentation. It is also preferable that the time displayed on the timing device be capable of

being projected by a projector to the viewing audience in an easy to read and interference free manner.

STATEMENT OF THE INVENTION

[0010] The present invention and embodiments thereof are set forth in the appended claims.

SUMMARY OF THE INVENTION

[0011] The present invention provides an overhead projector including a time tracking device for the purpose of tracking presentation time and displaying the presentation time to an audience. The time tracking device may be disposed within any type of overhead projector as is often used in an educational classroom environment a projector operably connected to a laptop computer. The time tracking device may include features such as start, stop, pause, reset, etc. The present invention solves the problems associated with the conventional time tracking devices described above by providing a time tracking device that is incorporated into the projector housing, eliminating the need for a time tracking device to be supplied by a presenter.

[0012] The device of the present invention may be operated by a presenter and/or by audiovisual personnel. The present invention also provides an easy to use device that does not interfere with the use of its associated projector.

[0013] The time tracking device of the present invention may include keys operable for controlling the functions of the device, such as a start key, a stop key, a reset key, a pause key, an on/off key, a display key, a mode key, or any other additional key that may be assigned a specific function. The time tracking device further includes a timer display, either analog or digital, that may be displayed to an audience via the projector light source and projector lens. The time tracking device display may include a liquid crystal display or any other type of display capable of being projected onto a screen viewed by the audience.

[0014] The time tracking device of the present invention eliminates the need for a presenter to supply his/her own time tracking device.

[0015] The time tracking device has a low power requirement which may be satisfied by solar panels, a battery, a connection to the circuitry of the associated projector, or a combination of any of the preceding.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016]

Figure 1 is a diagram illustrating a time tracking device incorporated into an overhead projector in accordance with an exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0017] Referring now to the drawing, FIG.1 is a diagram illustrating one embodiment of the of the present invention time tracking device 10 incorporated within an overhead projector 12. The time tracking device 10 is disposed within the projector housing 14, preferably within one corner of the housing surface 16, so as not to interfere with the bulk of the usable space of the housing surface 16. In alternative embodiments, the time tracking device 10 may be disposed within any other portion of the projector housing 14.

[0018] The device display 18 may consist of an analog or a digital display. The display 18 is incorporated into the light stage 20 of the housing surface 16. The device display 18 is transparent, such that the light source from within the overhead projector 12 can pass light through the device display 18 and project the analog or digital display of the timer readout onto the screen 22. The display may consist of a liquid crystal display (LCD) providing adequate visibility to the presenter and the audience. The presentation timer control pad 24 may be disposed within the opaque portion of the projector surface 16, such that light does not pass through the timer control pad 24. The positioning of the timer control pad 24 separates the heat sensitive components of the time tracking device 10 from the heat generated by the projector light source. In one embodiment, the timer control pad 24 may include light emitting diodes in the function keys 26 so that a presenter can easily see the function keys 26 in a darkened room.

[0019] The timer control pad 24 consists of a plurality of function keys 26. The function keys 26 allow a presenter and/or AV personnel to control the functions of the timer, including turning the timer on/off, starting, stopping, pausing, resetting, stopwatch, turning the display on/off, selecting various timer modes, etc. The various timer modes include displaying the elapsed time of a presentation, a countdown of the time remaining, displaying any one of the hours, minutes, seconds, displaying the time of day, etc. The function keys 26 may consist of any of several well-known types of switches, such as pushbutton switches, toggle switches, etc. The function keys 26 illustrated consist of pushbutton switches. It is preferable to have switches that lie flush with the housing surface 16 so as not to interfere with any papers or transparencies placed on the housing surface 16, or interfere with the workspace of the projector 12. It is also preferable to have a device display 18 that lies flush with the light stage 20 so that the device display 18 does not interfere with the working surface of the projector 12.

[0020] The time tracking device 10 has a low power requirement. In this embodiment, the time tracking device 10 may be connected to the circuitry of the projector 12. In a second embodiment, the device 10 is equipped with a solar panel 28 on its surface. The solar panel 28 may be located on the device display 18, or on the control pad 24. Positioning the solar panel on the device display 18

exposes the solar panels 28 to more light due to the light source of the projector 12 emitting light directly onto the solar panel 28 surfaces. Because of the lower power requirement of the time tracking device 10, it is not necessary that the solar panels 28 be located on the display portion. Light from the room during periods when the room is not darkened may power the timer device 10 and all of its associated functions. In a third embodiment, the time tracking device 10 may be powered using a battery. The solar panels 28, battery, and projector power source may all be used alone or in combination to power the time tracking device 10.

[0021] The time tracking device 10 may be cooled using the cooling mechanism of the projector 12, typically a fan motor. The light source of a projector typically produces heat which can easily damage the components of the time tracking device 10. The fan motor assembly forces air over the light source and other internal components of the projector in order to maintain optimal operating temperatures and prevent overheating. Solar panels 28, batteries, and LCD displays are all sensitive to heat exposure. The fan motor also cools the projector surface 16, particularly the light stage 20. The timer control pad 24 is exposed to a lesser amount of heat because it is disposed within the opaque portions of the housing 14, as compared to the light stage 20 in which the device display 18 is located.

[0022] As stated above, the time tracking device 10 may be controlled by a presenter and/or AV personnel. The timer readout is projected to the audience using the light source and lens of the projection device. The function keys 26 include a "display" function key that is operable for turning the display on or off. Turning the display "on/off" provides a presenter the option of being the only person able to view the timer readout. This may be useful in an exam situation in which a timer may be a distraction to test takers. In other situations, it may be desirable to display the timer readout to the audience as well as the presenter, such as during an exam in which the audience is allowed to view a slide for a pre-determined amount of time, then the projector moves onto the next slide and the timer resets and a new countdown begins.

[0023] An audible, visual, and combination alarm may be a component of the control pad portion of the time tracking device 10. An alarm may be used to cue a presenter that a certain amount of time has elapsed. In one example, students could be taking a timed exam from transparencies placed onto an overhead projector. When the exam begins, the time tracking device 10 is activated and a countdown of thirty minutes begins. The timer readout is projected onto the screen and appears in the lower left hand corner of the screen, large enough to be visible by the audience, but not large enough to distract the audience from the subject matter of the transparencies. When five minutes is remaining, the visual alarm of the timer may cause the readout to flash on and off, alerting the students of five minutes remaining. When the time has completely expired, an audible alarm, such as a

"beep" may be sounded, alerting the students and the presenter that time has expired. The audible alarm may persist until it is shut off by the presenter, or may shut off after a certain time period, five seconds for example. Visual and audio alarms may be set to activate at any time period determined by the presenter.

[0024] In another embodiment, the time tracking device may be connected to the power circuitry of the projector alone, or in combination with the solar panels, or a battery, such that the time tracking device is capable of cutting the power supply to the illumination device in the projector. In such an embodiment, the time tracking device could turn the power off to the illumination device in the projector after a predetermined time so that the moderator is not the 'bad guy' and the machine is.

[0025] The described embodiments are merely illustrative and should not be considered restrictive in any way. The scope of the invention is to be measured by the appended claims.

Claims

1. An overhead projector comprising a time tracking device (10) incorporated into the housing (14, 34) of the overhead projector (12, 30), the time tracking device further comprising:

- i) a transparent device display (18), positioned for light from within the overhead projector to pass through and project a readout of the transparent device display;
- ii) a timer control pad (24) incorporated into the housing of the overhead projector, wherein the control pad controls the readout and functions of the time tracking device;
- iii) a power source (28) to supply power to the transparent device display and the timer control pad;

wherein the timer control pad (24) is disposed within an opaque portion of a surface (16) of the overhead projector housing (14, 34).

2. The overhead projector of claim 1 **wherein** the overhead projector (12, 30) includes a cooling mechanism and the time tracking device (10) is arranged to be cooled thereby.

3. The overhead projector of claim 1 or claim 2 **wherein**:

- i) the overhead projector (12) has a light stage (20); and,
- ii) the transparent device display (18) of the time tracking device (10) is incorporated into the light stage.

4. The overhead projector of any of claims 1 to 3 **wherein** the display (18) consists of a liquid crystal display (LCD).
5. The overhead projector of any of claims 1 to 4 **wherein** the power source is a solar panel (28) on the surface of the time tracking device (10), the panel being located on the device display (18) or on the control pad (24).
6. The overhead projector of any of claims 1 to 5 **wherein** an audible, visual or combination alarm forms part of the timer control pad (24), whereby the alarm may be programmed to be given at any pre-determined time period or interval or to alert a presenter and audience at a pre-determined time selected by the presenter.
7. The overhead projector of any of claims 1 to 6 **wherein** with the power source (28) is connected to power circuitry of the overhead projector (24), the time tracking device (10) is operable to cut the overhead projector power supply to an illumination device in the overhead projector.
8. The overhead projector of any of claims 1 to 7 **wherein** the timer functions are controlled by at least one of the following: the presenter, the audience, A/V personnel.

Patentansprüche

1. Overheadprojektor, umfassend eine Zeitverfolgungsvorrichtung (10), die in dem Gehäuse (14, 34) des Overheadprojektors (12, 30) untergebracht ist, bei dem die Zeitverfolgungsvorrichtung des Weiteren einschließt:
 - i) eine lichtdurchlässige Anzeigeeinrichtung (18), die angeordnet ist, um Licht vom Innern des Overheadprojektors durchzuleiten und eine Ausgabe der lichtdurchlässigen Anzeigeeinrichtung zu projizieren;
 - ii) ein Zeitschaltfeld (24), das in dem Gehäuse des Overheadprojektors untergebracht ist, wobei das Schaltfeld die Ausgabe und Funktionen der Zeitverfolgungsvorrichtung steuert;
 - iii) eine Stromquelle (28), um die lichtdurchlässige Anzeigeeinrichtung und das Zeitschaltfeld mit Strom zu versorgen;

wobei das Zeitschaltfeld (24) im Innern eines lichtundurchlässigen Teils einer Oberfläche (16) des Overheadprojektorgehäuses (14, 34) angeordnet ist.
2. Overheadprojektor nach Anspruch 1, wobei der

Overheadprojektor (12, 30) eine mechanische Kühleinrichtung umfasst und die Zeitverfolgungsvorrichtung (10) so eingerichtet ist, um **dadurch** gekühlt zu werden.

3. Overheadprojektor nach Anspruch 1 oder Anspruch 2, wobei:
 - i) der Overheadprojektor (12) einen Lichttisch (20) aufweist; und
 - ii) die lichtdurchlässige Anzeigeeinrichtung (18) der Zeitverfolgungsvorrichtung (10) in dem Lichttisch untergebracht ist.
4. Overheadprojektor nach einem der Ansprüche 1 bis 3, bei dem die Anzeige (18) aus einem Flüssigkristall-Bildschirm (LCD) besteht.
5. Overheadprojektor nach einem der Ansprüche 1 bis 4, bei dem die Stromquelle ein Solarpanel (28) auf der Oberfläche der Zeitverfolgungsvorrichtung (10) ist, wobei das Solarpanel auf der Anzeigeeinrichtung (18) oder auf dem Zeitschaltfeld (24) angeordnet ist.
6. Overheadprojektor nach einem der Ansprüche 1 bis 5, bei dem ein akustisches, optisches Alarmsignal oder Kombination davon einen Teil des Zeitschaltfeldes (24) bildet, wodurch das Alarmsignal programmiert werden kann, um bei jedem vorherbestimmten Zeitraum oder zeitlichen Abstand abgegeben zu werden oder einen Moderator und Zuhörer zu einem durch den Moderator ausgewählten, vorherbestimmten Zeitpunkt zu warnen.
7. Overheadprojektor nach einem der Ansprüche 1 bis 6, bei dem die Stromquelle (28) mit der Stromschaltung des Overheadprojektors (24) verbunden ist, wobei die Zeitverfolgungsvorrichtung (10) betriebsfähig ist, um die Overheadprojektor-Stromversorgung zu einer Beleuchtungsvorrichtung in dem Overheadprojektor zu unterbrechen.
8. Overheadprojektor nach einem der Ansprüche 1 bis 7, bei dem die Zeitgeberfunktionen durch zumindest einen der folgenden gesteuert werden: der Moderator, die Zuhörer, A/V-Personal.

Revendications

1. Rétroprojecteur comprenant un dispositif de suivi temporel (10) incorporé dans le boîtier (14, 34) du rétroprojecteur (12, 30), le dispositif de suivi temporel comprenant en outre :
 - i) un affichage de dispositif transparent (18), positionné pour faire être traversé par de la lumière depuis l'intérieur du rétroprojecteur, et pour pro-

- jeter un affichage du dispositif transparent ;
 ii) un bloc de commande de minuterie (24) incorporé dans le boîtier du rétroprojecteur, dans lequel le bloc de commande commande l'affichage et des fonctions du dispositif de suivi temporel ; 5
 iii) une source de courant (28) pour fournir du courant à l'affichage de dispositif transparent et au bloc de commande de minuterie ;
 dans lequel le bloc de commande de minuterie (24) est disposé à l'intérieur d'une portion opaque d'une surface (16) du boîtier de rétroprojecteur (14, 34). 10
2. Rétroprojecteur selon la revendication 1, dans lequel le rétroprojecteur (12, 30) comprend un mécanisme de refroidissement et le dispositif de suivi temporel (10) est agencé pour être refroidi par celui-ci. 15
3. Rétroprojecteur selon la revendication 1 ou la revendication 2, dans lequel : 20
 i) le rétroprojecteur (12) a un étage de lumière (20) ; et,
 ii) l'affichage de dispositif transparent (18) du dispositif de suivi temporel (10) est incorporé dans l'étage de lumière. 25
4. Rétroprojecteur selon l'une quelconque des revendications 1 à 3, dans lequel l'affichage (18) est constitué d'un affichage à cristaux liquides (LCD). 30
5. Rétroprojecteur selon l'une quelconque des revendications 1 à 4, dans lequel la source de courant est un panneau solaire (28) sur la surface du dispositif de suivi temporel (10), le panneau étant situé sur l'affichage de dispositif (18) ou sur le bloc de commande (24). 35
6. Rétroprojecteur selon l'une quelconque des revendications 1 à 5, dans lequel une alarme sonore, visuelle ou combinée forme une partie du bloc de commande de minuterie (24), de sorte que l'alarme peut être programmée pour être donnée à une période ou un intervalle de temps prédéterminé quelconque ou pour alerter un présentateur et un public à un instant prédéterminé sélectionné par le présentateur. 40 45
7. Rétroprojecteur selon l'une quelconque des revendications 1 à 6, dans lequel avec la source de courant (28) raccordée aux circuits de courant du rétroprojecteur (24), le dispositif de suivi temporel (10) peut fonctionner pour couper l'alimentation en courant de rétroprojecteur d'un dispositif d'éclairage dans le rétroprojecteur. 50 55
8. Rétroprojecteur selon l'une quelconque des reven-

dications 1 à 7, dans lequel les fonctions de minuterie sont commandées par au moins un des éléments suivante le présentateur, le public, le personnel audiovisuel.

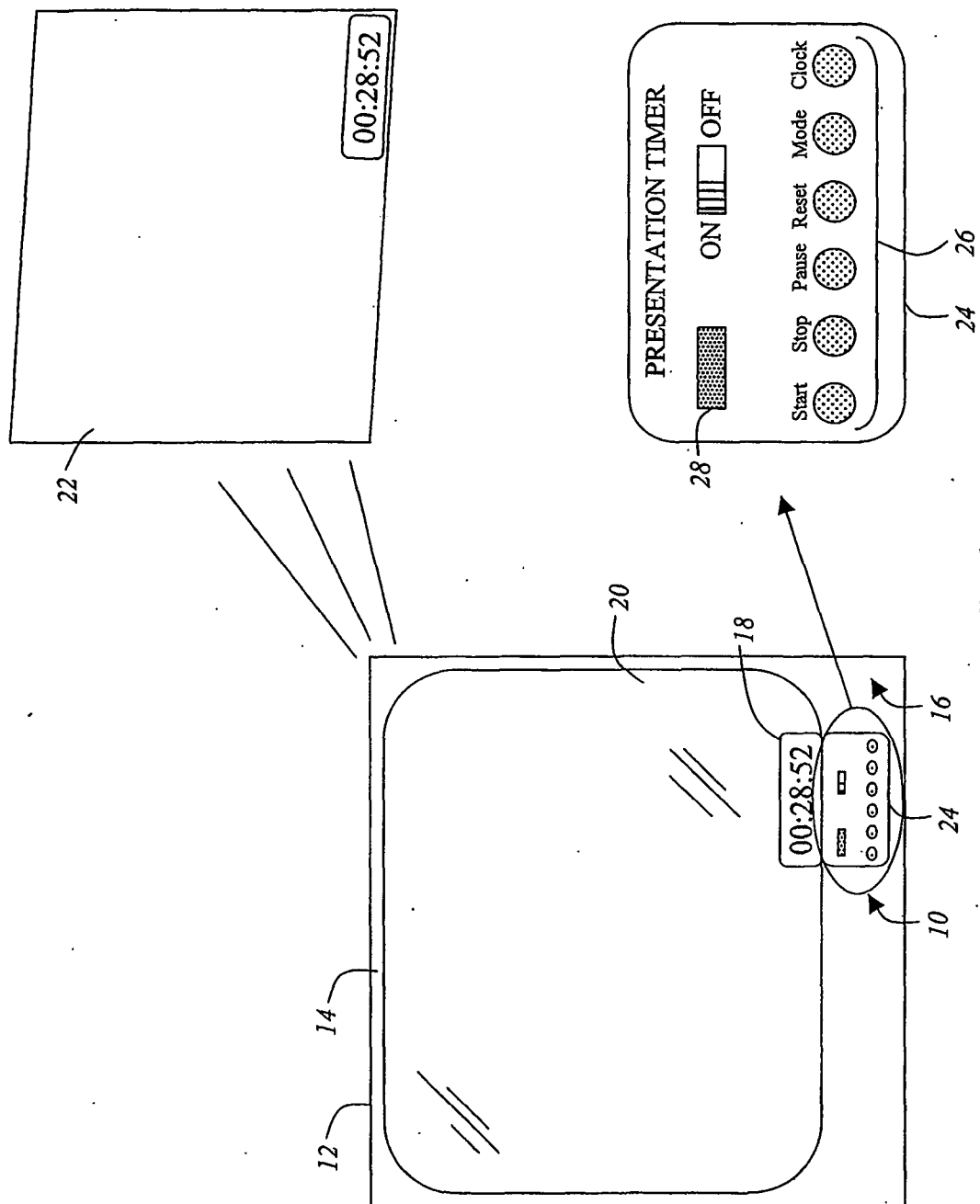


Fig. 1

REFERENCES CITED IN THE DESCRIPTION

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