Title: PORTABLE ELECTRONIC TIME KEEPER

Abstract: A small portable, electronic, battery powered, dedicated task/time recording device which has means for storing and displaying task data downloaded from a computer, input means for starting and stopping recording of times worked on individual tasks, and data transfer means for downloading task data from a remote source and uploading time data to a remote destination. The input and data transfer means are so configured that only a single input operation (e.g. a button push) is required for any function to be initiated.
Declarations under Rule 4.17:
— of inventorship (Rule 4.17(iv)) for US only

Published:
— with international search report

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PORTABLE ELECTRONIC TIME KEEPER

Technical Field

This invention relates to portable electronic time keeping devices.

Background Art

In many work environments there is a need to record time spent by workers on specific jobs or tasks. Traditional time recording systems involving the use of time sheets which workers are required to fill in manually are time consuming and cumbersome, and often meet with worker resistance to their use. There may also be a requirement to transfer time data from timesheets to a computer based system, involving further non-productive time.

Time recording systems requiring workers to enter data directly into a computer are unsuitable for many work environments, and have the disadvantages that workers may be required to leave the workplace to record times, and must also have an appropriate level of computer literacy.

Time recording systems utilising small hand-held computers are readily available, but such devices, being multi-functional, are comparatively complex and inconvenient to operate, and generally require a significant amount of training and familiarisation to acquire proficiency in their use. They are therefore likely to meet with worker resistance in many work situations.

The invention covered by this application overcomes these disadvantages by providing each worker with a small electronic dedicated time / task recording device with data transfer capabilities, which is extremely simple and convenient to use.
Disclosure of the Invention

The invention comprises a small portable battery powered electronic dedicated time / task recording device that is designed to be carried in a shirt or overall pocket, on a belt clip, on a necklace or in any other manner which is convenient and safe for the worker/user. It has a display means which displays, at least, a programmable list of tasks that the worker may be required to work on in a given time period, together with the worker’s name, plus an input means which allows the worker to start and stop time recording against each task. It also has a data storage means for storing task and time data, and a data transfer means for downloading task data from a remote source and uploading time data to a remote destination.

In one preferred embodiment the display means is an LCD screen with provision for displaying a number of tasks (typically up to ten) with one task per line. The input means are a pushbutton corresponding to each task position on the screen, a STOP button, an UPLOAD button, and a DOWNLOAD button. Data is stored within the device in a reusable memory. An infrared receiver is provided for downloading task data from a central Computer, and an infrared transmitter is provided for uploading time data to the central Computer. A software package is provided for entering and downloading the task data via the central Computer, and for uploading and processing the recorded time data.

When commencing work on a particular task, the worker is required to press the button corresponding to that task. This records the start date and time of the task. When commencing work on a new task, the worker presses the button corresponding to the new task. This records the finish date and time of the previous task, and the start date and time of the new task. Hence only one task can be recorded at a time. When finishing work on a task and not commencing work on a new task e.g. at the end of the workday, the worker presses the STOP button. When recommencing work on a task that has previously been worked on, the worker presses the button corresponding to that task again. All dates and times worked on individual tasks are recorded and stored in memory until uploaded to the central Computer. When data is required to be uploaded to the central Computer via an infrared link, the operator presses the UPLOAD button. When data is required to be downloaded from the central Computer
via an infrared link, the operator presses the DOWNLOAD button.

**Brief Description of Drawings**

5 Fig. 1 diagrammatically illustrates an embodiment of the Timekeeper device. As shown, device is comprised of a display 1 to indicate tasks, date and time, the employee’s name and status. In addition, it has buttons 2 to allow the starting of timekeeping for any task listed, a stop button 3 and command buttons 4 to facilitate the up and down loading of tasks, time and clock synchronization.

10 Fig. 2 schematically illustrates a Timekeeper system according to one embodiment of the invention. The system basically comprises one or more Timekeeper portable devices 10, an interface device or methodology 20 which supports communications between the Timekeeper device and a Computer device, in this case an infrared interface to the Timekeeper device and a serial interface to the computing device, and a computer device 30 which provides, via the interface device 20, task, employee data and clock synchronization to the Timekeeper and receives timer data from the Timekeeper which can then be used in billing and management functions.

20 **Fig. 3A Flow chart – Timekeeper Upload/Download Task & Time Data System**

1. Operator initiates an Upload or Download function.
2. The Timekeeper device initializes communications with the interface device.
3. If the command is to download data from the computer device go to step 6.
4. Upload, send, transfer the timer data by task and employee to the computer device via the interface device.
5. Reset timers for all tasks after successful upload.
6. If a download is requested, then download, transfer, receive Employee data and task data from the computer device and initialize all timers via the interface device.
7. Initialize the Timekeeper clock and synchronize with the clock on the computer device.
Fig. 3B  Flow chart – Timekeeper Start/Stop Timer Functions.

8. An initialized Timekeeper is running.
9. Timekeeper waits for the user to press a Task selection, or stop button.
10. If the button pressed was a Task selection or Stop button go to step 12.
11. If any other button was pressed, present an error to the user and return to step 9.
12. If the Stop button was not pushed, go to step 14.
13. The Stop button was pushed. Stop the current timer and save the result with the associated task. And return to step 9.
14. If the Task Selection button pressed is not the current running task timer continue otherwise go to step 11 to present the user with an error message.
15. A new Task has been selected, stop the current task timer and save the result with the associated task.
16. Retrieve the timer data for the new Task and continue or start the timer and return to step 9.

It is to be understood that a Timekeeper system according to the invention may include a plurality of Timekeeper devices and may include a plurality of interface devices and computer devices.

The invention described herein is susceptible to variations, modifications and/or additions other than those specifically described and it is to be understood that the invention includes all such variations, modifications and/or additions which fall within the spirit and scope of the above description.
Best Mode for Carrying Out the Invention

A device of a shape and size that is easily carried on the employee's person in a pocket, on a clip or on a lanyard. Such a device should not exceed 150mm by 60mm by 15mm in size and should have a hinged cover protecting the operating buttons of the device. Such a device may be larger or smaller than described and may not include a cover.

A device that is self-powered, containing enough memory and computing capability to be capable of recording task / time activity on a number of tasks. Such a device having a display means for displaying 8 Task identifiers, the employee name, the current date and time and the value of the current active task timer and status information. Such device having one button or input for each task displayed, a stop button or input and function buttons or inputs for up load and down load and such other functions as may be necessary. Such a device can be made to include more or fewer Task identifier displays and buttons or inputs as may be desired.

Such a device may record elapsed time by task creating a new record for each time that task is started or restarted or it may record total accumulated time for a task starting the timer from the then current value for that task each time a task is started or restarted. The device will start or restart the timer for a task each time the button or input corresponding with that task is activated when that task is not already being timed.

Such device is capable of and has a means to communicate with a remote destination. The device can download Employee, Task and Date time data from a remote location and load it into its memory. Further the device can upload accumulated employee task timer records to a remote location. In this embodiment, an infrared communications interface is envisioned for providing such communications, where the remote location is in the same vicinity as the work location. In a variation of the preferred embodiment, an interface to a telephone line may be provided.

In a variation of the preferred embodiment, the timekeeper device may be provided with additional input means, such as an alpha-numeric keypad and/or scroll keys, which
would allow a worker to enter task data (such as a customer name, or a job name or number) in task locations assigned on the display screen and in memory for worker input. A device according to this variation could be used, for example, by workers such as independent subcontractors, who may not have a fixed work location and who may receive task requests at random by telephone or other means.

**Industrial Applicability**

The Portable Electronic Timekeeper described herein is applicable to a variety of work environments where workers are required to record times spent working on defined tasks, and such time data needs to be processed for billing or other purposes. It is particularly suited to environments such as factories or workshops where manual or semi-manual tasks are performed, and an individual worker is required to perform many different tasks in a given time period. Key features are its flexibility and simplicity of operation, which will reduce worker resistance to its use. It is not intended to replace existing time recording and processing software packages that tend to be used by professionals such as accountants and lawyers. However, it is certainly suitable for office environments where no such software package is already in use.
Claims:

1. A portable, battery powered, dedicated task / time recording device having a display means for displaying task data, together with a single touch input means for starting and stopping time recording of individual tasks, reusable memory means for recording task and time data within the device, and read / write means for electronically downloading task data to the device from a remote source, and a single touch command means for uploading time / task data from the device to a remote destination.

2. A device of Claim 1, capable of displaying and timing 8 tasks, having a display line for each task and a corresponding button or input device for each task.

3. A device of Claim 1, having a hinged cover to prevent accidental input of data.

4. A device of Claim 1, capable of storing and managing multiple date, time and elapsed time records for each task.

5. A device of Claim 1, capable of displaying and timing between 1 and 7 tasks, having a display line for each task and a corresponding button or input device for each task.

6. A device of Claim 1, capable of displaying and timing more than 8 tasks, having a display line for each task and a corresponding button or input device for each task.

7. A device of Claim 1, capable of accumulating total elapsed time records for each task.

8. A device of Claim 1, utilizing any form of removable memory.

9. A device of Claim 1, but providing an additional worker alert or reminder function whereby the device can have prescheduled tasks (e.g. a health and
safety meeting) loaded that have a specific start time and a prescribed advanced warning or reminder. The device would then sound an audible alarm, vibrate or by some other means remind the employees in addition to providing and on screen message.

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10. A device of Claim 1, having a means of transferring data to and from portable storage devices such as magnetic cards, smart cards or any other portable storage system that can then be collected or mailed.

11. A device of Claim 1, having a means to download / upload from a remote site via a communications interface.

12. A device of Claim 6, having scroll keys allowing the user to have large numbers of Tasks and/or multiple customers for whom it is desired to track time usage.

13. A device of Claim 6, incorporating input means to allow local entry of task descriptors in display and memory locations assigned for the purpose.

14. A device of Claim 1, having data entry and command functions via touch screen or means other than buttons.
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

Int. Cl. 7: G07C 1/10, G06F 17/60

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of database and, where practicable, search terms used)

DWPI: IPC G07C, G06F, G04G 1/02, G04G 9/02 and keywords (task, activity, work, time, duration, portable, handheld, upload, download, transfer, display, interface, start, stop, pause) and similar terms

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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<td>US 5877953 A (CLENDENEN et al.) 2 March 1999 See entire document</td>
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Name and mailing address of the ISA/AU

AUSTRALIAN PATENT OFFICE
PO BOX 200, WODEN ACT 2606, AUSTRALIA
E-mail address: pct@ipaustralia.gov.au
Facsimile No. (02) 6285 3929

Authorized officer

A. ALI

Telephone No: (02) 6283 2607

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