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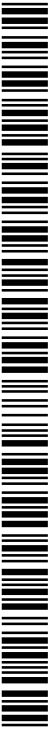
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(54) Title: MULTI-FUNCTION ELECTRONIC PDA DEVICE

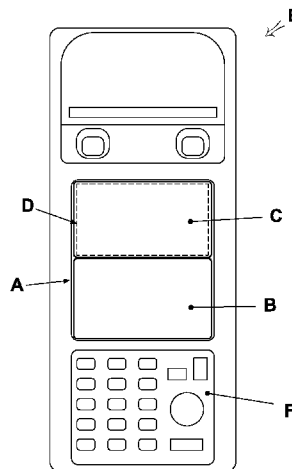


Fig. 2

(57) Abstract: The invention is a new multifunction electronic PDA device comprising: a display (A), at least one CPU, at least one operation memory, at least one data input and display interface. Said display (A) comprises at least two portions (B, C) or data display areas, wherein at least one of said areas (C) has variable orientation or can be oriented differently from the other area, or main area (B), said orientable area (C) being suited to display an image according to at least one different orientation with respect to the orientation of the main area (B).

TITLE

MULTIFUNCTION ELECTRONIC PDA DEVICE

DESCRIPTION

5 This patent relates to multifunction palmtop computers and in particular concerns a new multifunction handheld electronic device equipped with a display or a screen.

Prior art comprises palmtop computers, that is, electronic devices with dimensions and weight that make them suitable to be held with one hand and be fully portable even during operation.

10 These palmtop computers typically include a plurality of peripheral devices integrated in a single box-shaped body, such as the data display, keyboard for data entry, CPU, random-access and storage memory.

Prior art also comprises palmtop computers equipped with an integrated printer and one or more additional memory cards.

15 Depending on the intended use of the electronic device, it can also comprise further integrated accessories and peripherals. For example, the well-known electronic devices for the management of credit card and/or debit card (cashless) payments also comprise an interface for chip cards based on contact or contactless technology and a display or touch screen area to enter
20 personal identification numbers or to sign to complete the credit card transaction.

These handheld electronic devices to manage payments typically have a single display to show the relevant data, and therefore provide for a limited use of the device itself, where the seller and the buyer must be side by side
25 in order to simultaneously view the display, or the handheld device must be continuously rotated back and forth from the buyer's to the seller's position.

One possible solution for this drawback could be to equip the device with a

second display, but this solution makes the device less compact, more prone to failures, and more structurally complex as a result of the greater number of components.

5 The object of this patent is a new type of multi-function handheld electronic device equipped with a display or screen.

The main object of the present invention is to make the device easier and more comfortable to use for both the main user and one or more secondary users.

10 Another object of the present invention is to integrate more functions into a single device including for example those of a regular computer, the management and execution of electronic payments (cashless), and the recording of transactions for tax purposes.

A further object of the present invention is to achieve a compact device by limiting the number of components.

15 Yet another object of the present invention is to integrate various features, including for example, detection systems for counterfeit money.

20 These and other objects, direct and complementary, are achieved by the new handheld multifunction electronic device of a type comprising the following components in a single box-shaped body: a display, at least one CPU, at least one random-access memory, at least one interface for data entry, and where the aforementioned display comprises at least two display areas, where at least one of these areas can be oriented differently with respect to the other main area.

25 This orientable area is suited to display the image according to at least one different orientation with respect to the orientation of the main area.

The new handheld electronic device is particularly suitable for use as a normal computer for the management of sales, orders, payments, electronic

payments (cashless), and/or the recording of transactions for tax purposes.

In this regard, the new multifunctional palmtop device conveniently also comprises at least one housing with an interface for a fiscal memory device (for example DGFE in Italy) for the secure recording of the receipts issued.

5 For example, that interface is usefully located in the rear of the device, for example in the battery compartment that is normally accessible by the operator and has no anti-tampering tax seal.

The device also preferably comprises at least one integrated printer used for printing orders and/or other non-tax related documents and/or for printing
10 receipts, wherein the printer is programmed, in a manner that cannot be changed by the user, to format receipts, that is, the size, font, the information to be printed, any possible tax logotype, while also recording the relevant data in the aforementioned fiscal memory device, and the printing of the words "NOT FOR TAX PURPOSES" when non tax relevant
15 documents are printed.

The device also comprises at least one unalterable fiscal memory device and its housing inside an integrated housing not accessible from the outside of the device itself, this fiscal memory being permanently fixed inside the housing, and where the housing itself can only be opened after breaking the
20 anti-tampering tax seal.

The new device includes the data display, suited for example to display an order, or a list of products selected by the customer, with their quantities and/or prices, and the total amount for confirmation by the customer.

The display of the new device, as noted, comprises at least two display
25 areas: a main area and at least one orientable area, where the orientable area is suited to show the display according to at least one different orientation with respect to the orientation of the main area.

In the preferred embodiment, at least one orientable area can be oriented in the same way as the main area of the display, thereby enabling the use of the display in the conventional manner as a full-size display, or may be otherwise oriented, for the use of the display independent of the main area.

5 For example the orientable area can be rotated 90° , 180° , or 270° with respect to the main area, in order to be viewed by a second user located for example in front of or to the side of the main user of the device.

The at least one orientable area can be oriented following a voluntary command from the user and/or can occur automatically as a function of the
10 position of the device.

The new device thus includes at least one position sensor, such as an accelerometer suited to detect the variations in orientation and/or position of the device and to send signals to the device itself to correspondingly vary the orientation of the at least one orientable area.

15 For example, when the main user has to show part of the display to a secondary user located in front of him, he must simply place the device horizontally so that the at least one orientable area rotates 180° with respect to the main area, which remains properly oriented toward the primary user, while the at least one orientable area is correctly oriented toward the
20 secondary user.

The at least one accelerometer may also detect the inclination of the device, consequently orienting the at least one display area so that it is properly oriented and thus readable for the user toward which the device is inclined.

A practical application of the new device is to use it as a cash register to
25 record transactions for tax purposes, where those products from a list according to the instructions of the buyer and the total amount appear in the display.

Once the purchase is confirmed the tax receipt printing process is initiated during which the list of products, partial sums and the total amount is simultaneously displayed on the screen and printed.

5 This list with partial sums and the total amount is then displayed in both areas of the display and in any case at least in the orientable area, for example rotated by 180° with respect to the main area.

10 The new device may also comprise at least one touch screen which can be separated from the data display or superimposed on all or part of the main display, for example coinciding with the orientable area so that the buyer can type in his/her PIN or signature while remaining in front of the seller using the device.

15 This touch screen is useful for payment procedures or other procedures that require a manual signature, with graphometric/biometric data captured from the signature itself and/or to authenticate the signature, for example, for the procedures of acceptance and verification of a document or receipt, or to enter a personal identification number PIN.

Alternatively or in combination, the new device may comprise a keyboard to enter a personal identification code (PIN).

20 This touch screen function of the display or portion of the display can be activated when needed or may always be activated.

The new device may also comprise one or more means of verification of banknotes, for example one or more ultraviolet and/or infrared light detectors.

25 Thus the new device enables the following applications by way of non-limiting example: operations for door to door sales, attempted sales, sales on board means of transport, such as on-board aircraft or catering on-board trains, issuing fines, management of car parks, mobile ticketing, ticket or

label verification in general, meter reading, cash/valuables-in-transit (CVIT), technical support at the customer's premises, express courier services and postal and delivery services in general, warehouse logistics, healthcare, hospitality, and municipal services in general.

5 The characteristics of the present invention will be better clarified by the following description with reference to the drawing, attached by way of non-limiting example.

10 Figures 1 and 2 show the new device (E) with the display (A) respectively in the full screen display mode and differently orientable two-area mode (B, C).

It is a multifunctional electronic palmtop device (E) comprising in a single box-shaped body a display (A), at least one CPU, at least one random-access memory, and at least one interface for data entry such as a keyboard (F).

15 The display (A) comprises at least two portions (B, C) or data display areas, wherein at least one of the areas (C) can be variably oriented or oriented in a different way from the remaining area, or the main area (B), that orientable area (C) being suited to display an image according to at least one orientation different than the orientation of the main area (B).

20 For example, the at least one orientable area (C) can be oriented in the same way as the main area (B) of the display (A), for a full screen view, or may be otherwise oriented, for a view independent of the main area (B).

25 The new multifunctional electronic palmtop device (E) may further comprise at least one touch screen (D) superimposed on part or all of the display. Alternatively the touch screen display (D) may only coincide with the portion of the orientable area (C).

The new device (E) also comprises at least one detector of counterfeit

banknotes, for example, based on ultraviolet or infrared light, positioned by way of a non-limiting example on the back of the body.

Therefore, with reference to the preceding description and the attached drawing the following claims are made.

CLAIMS

1. Multifunction electronic PDA device (E) for the management of sales, orders, payments, electronic payments (cashless), and/or the recording of transactions for tax purposes, comprising, in a single box-shaped body: a
5 display (A), at least one CPU, at least one operation memory, at least one data input and display interface, **characterized in that** said display (A) comprises at least two portions (B, C) or data display areas, wherein at least one of said areas (C) has variable orientation or can be oriented differently from the other area, or main area (B), said orientable area (C) being suited to
10 display an image according to at least one orientation different from the orientation of the main area (B).

2. Multifunction electronic PDA device (E) according to claim 1, **characterized in that** said at least one orientable area (C) can be oriented in the same way as the main area (B) of the display (A), for a full-screen
15 visualization, or can be oriented differently, so that the visualization is independent of said main area (B).

3. Multifunction electronic PDA device (E) according to claim 2, **characterized in that** said at least one orientable area (C) can be rotated by 90°, 180° or 270° or a selectable angle with respect to said main area (B).

20 4. Multifunction electronic PDA device (E) according to claims 1, 2, 3, **characterized in that** it also comprises at least one housing with interface for an electronic journal device (DGFE).

5. Multifunction electronic PDA device (E) according to claims 1, 2, 3, 4, **characterized in that** it also comprises at least one integrated printer to
25 be used for printing fiscal and non fiscal documents.

6. Multifunction electronic PDA device (E) according to the preceding claim, **characterized in that** said printer is programmed, in a way that cannot be modified by the user, in order to format the receipt, meaning its size, the type of character used and the information contained therein, to add
5 any logotype with the device identification number, to provide for simultaneous registration in the electronic journal device (DGFE) and to print the words "NON FISCAL" if other types of documents are issued.

7. Multifunction electronic PDA device (E) according to claims 1, 2, 3, 4, 5, 6, **characterized in that** it also comprises at least one fiscal memory
10 with unalterable contents, and the relative housing inside an integrated casing that cannot be accessed from the outside of the device, said fiscal memory being fixed in a removable manner inside said casing, and wherein said casing can be opened only after breaking the fiscal seal.

8. Multifunction electronic PDA device (E) according to claims 1, 2, 3, 4, 5, 6, 7, **characterized in that** it comprises at least one touch screen (D)
15 for entering data and/or making a manual signature, for capturing digital graphometric/biometric data from the signature and/or authenticating the signature and/or entering a personal identification number (PIN) or other code, wherein said touch screen (D) is completely or partially superimposed
20 to said data display (A).

9. Multifunction electronic PDA device (E) according to claims 1, 2, 3, 4, 5, 6, 7, 8, **characterized in that** said touch screen (D) coincides with said at least one orientable area (C) of said display (A).

10. Multifunction electronic PDA device (E) according to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, **characterized in that** it comprises one or more position
25

sensors, accelerometers or means suited to detect the variations in orientation and/or position and/or the movement of the device in the space, to correspondingly vary the orientation of the at least one orientable area (C), depending on the position of the device (E) itself.

- 5 **11.** Multifunction electronic PDA device (E) according to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, **characterized in that** it also comprises at least one detector of counterfeit banknotes.

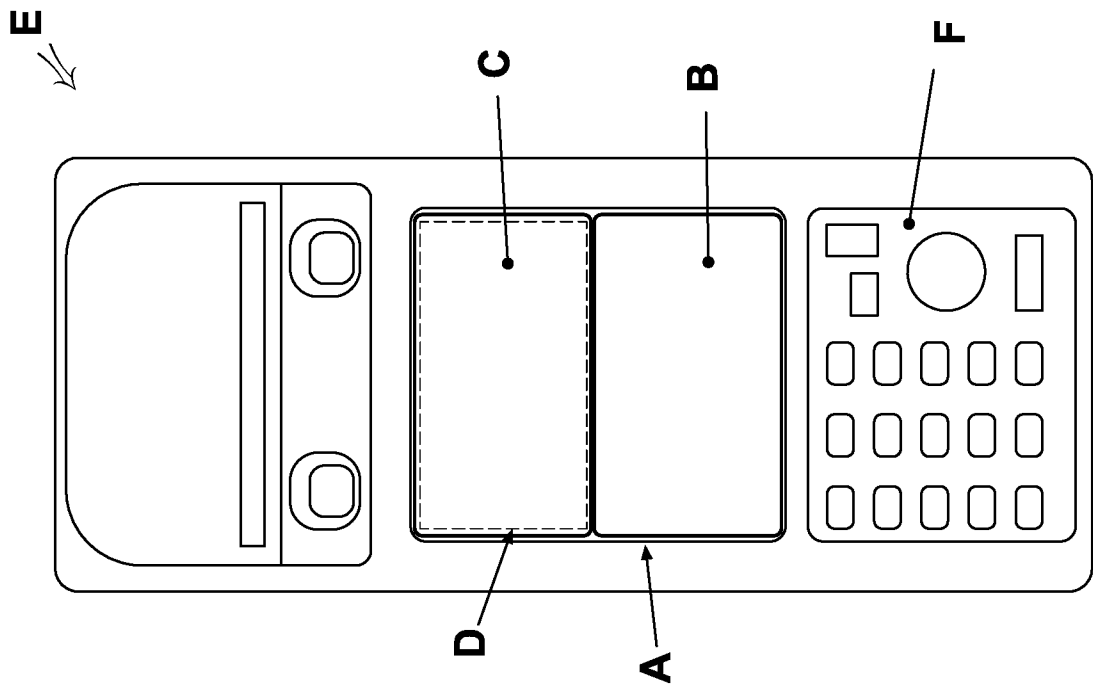


Fig. 2

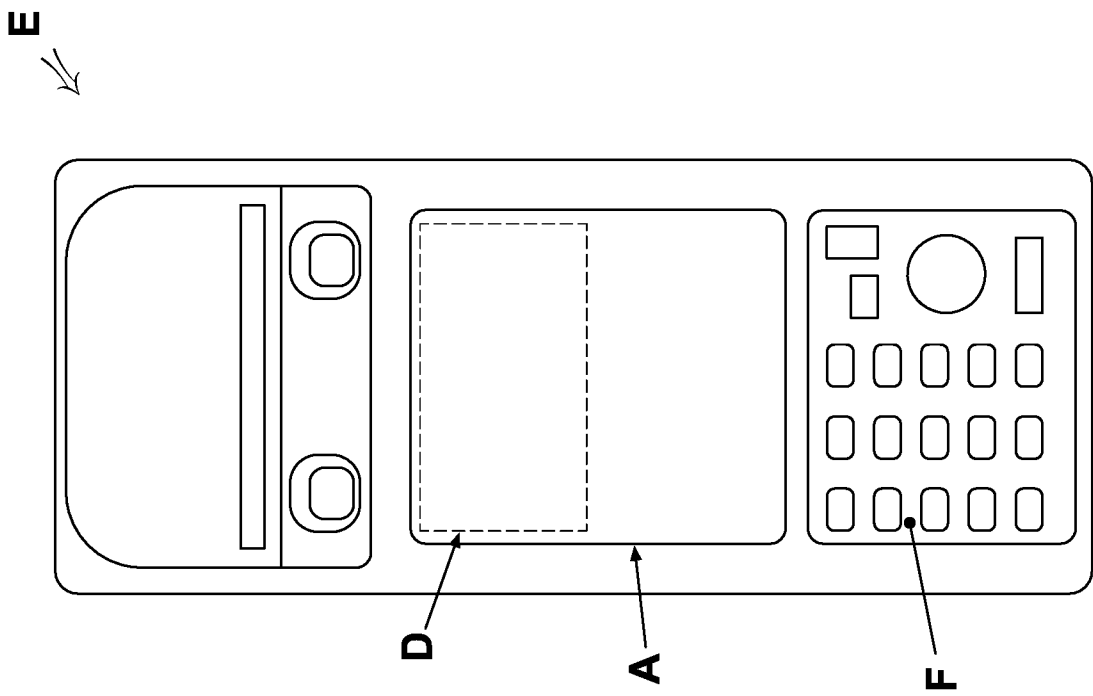


Fig. 1

INTERNATIONAL SEARCH REPORT

International application No PCT/IB2014/063185

A. CLASSIFICATION OF SUBJECT MATTER INV. G06F3/0488 G06F1/16 G07F7/08 ADD.				
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) G06F G07F G07G G06Q				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 2007/220444 A1 (SUNDAY DEREK E [US] ET AL) 20 September 2007 (2007-09-20) paragraphs [0032] - [0036]; figure 2 paragraphs [0042] - [0043]; figures 7,8 -----	1-11		
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.				
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Date of the actual completion of the international search	Date of mailing of the international search report			
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer De Ceulaer, Bart			

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International application No PCT/IB2014/063185

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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