



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
27.03.2013 Bulletin 2013/13

(51) Int Cl.:
G07F 9/06 (2006.01)
G07D 11/00 (2006.01) **G07G 1/00 (2006.01)**

(21) Application number: **12184138.1**

(22) Date of filing: **12.09.2012**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

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(30) Priority: **13.09.2011 SE 1100666**

(54) **Cash handling system**

(57) A cash management system has a cash unit (2) for depositing cash, a cash register unit (3) which is configured to enter the price of at least one item and which is connected to the cash unit (2), and a receipt printer (4) for dispensing receipts, which is connected to the cash

register unit (3) and/or the cash unit (2). The cash unit (2) is configured to retrieve or receive information regarding the quantity of items, the price per item and/or the total number of items from the cash register unit (3) and/or the receipt printer (4).

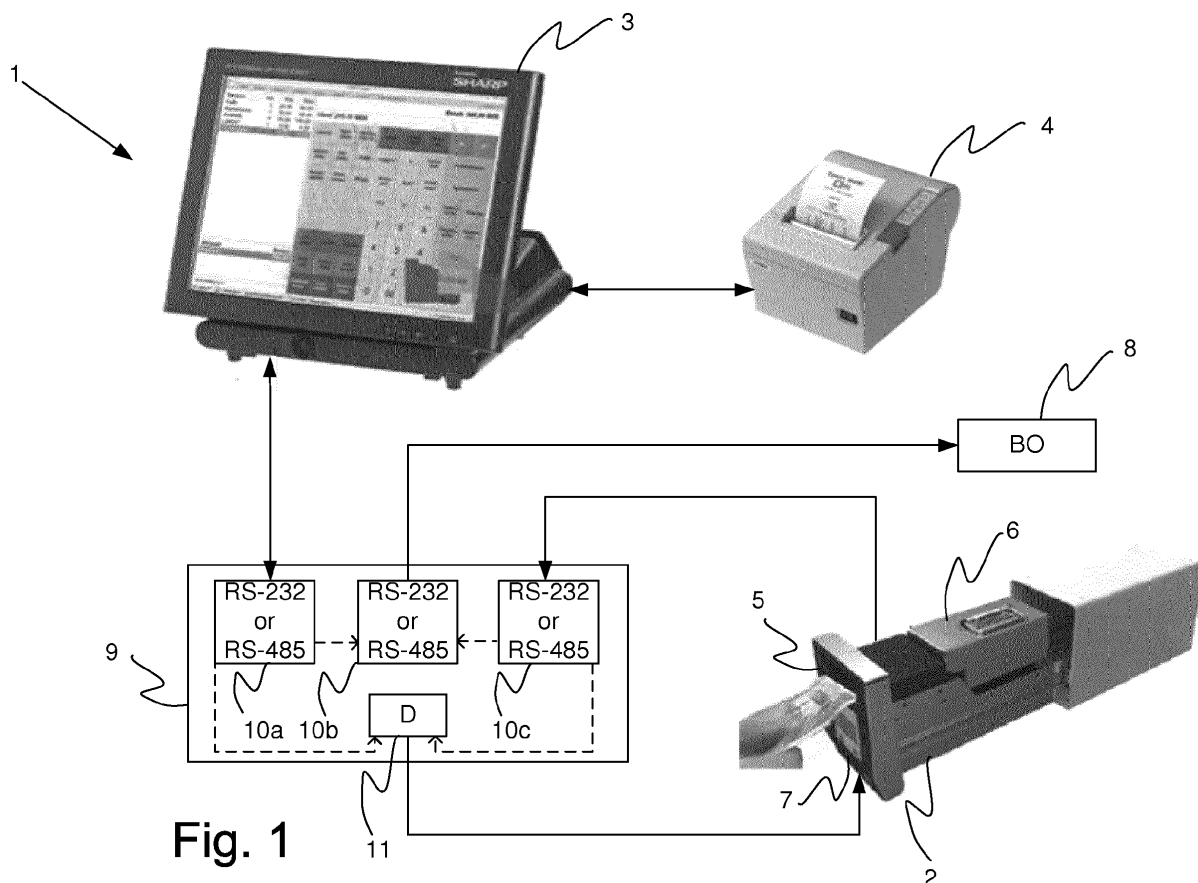


Fig. 1

Description

TECHNICAL FIELD

[0001] This invention relates to a cash management system for use at a checkout counter, for example in a department store.

BACKGROUND

[0002] In today's stores, there are often opportunities for a cashier to deposit cash of large denominations in a cash unit in order to avoid having large amounts of cash in the register. However, after each shift the cashier must count his/her own cash, using a calculator and receipt tape and also check that the total amount of money in the register and the cash unit correspond to the total registered amount of all goods sold at the register. This completion is a time consuming process for the cashier and it is easy to make mistakes when counting the cash.

SUMMARY

[0003] An object of this invention is to provide an improvement over prior art and particularly to reduce the problem a cashier encounters during a shift as described above. This object is achieved by the technique defined in the appended independent claims. Preferred embodiments are set forth in the dependent claims.

[0004] An advantage of this invention is that it significantly reduces the time it takes for daily accounting of the day cash registers since the cashier simply needs to deposit the total amount of money presented on the display of the cash unit or in the cash register unit, without having to calculate himself/herself. This also leads to fewer errors which can occur when a cashier is careless or makes calculation errors.

[0005] Another advantage is that the cashier is completely free of responsibility and further handling of the banknotes which have been deposited in the cash management system, since all the information is forwarded to the back office computer. Management staff in the office can then quickly and simply prepare banking of the day cash register, since the content of the storage box is counted and reported to the office.

[0006] A further advantage of this invention is that it reduces the risk of robbery and internal loss since the cashier no longer has any access to the deposited banknotes. Since the storage box is self locked when removed from the cash unit, the transportation from the register to the office is secure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Embodiments of this invention will be described further with reference to the enclosed drawings, wherein:

Fig. 1 schematically shows a cash management sys-

tem according to an embodiment,

Fig. 2 shows a cash unit according to an embodiment,

Fig. 3 schematically shows a cash unit according to an embodiment,

Fig. 4 shows a storage box according to an embodiment and its connection to the cash unit in Fig. 3,

Fig. 5 schematically shows the cash unit in Fig. 3 with various means of communication,

Fig. 6 schematically shows the cash unit in Fig. 3 and a module for wireless communication,

Fig. 7 schematically shows the cash unit in Fig. 3 and its ID settings,

Fig. 8 schematically shows the cash unit in Fig. 3 and its reading devices, and

Fig. 9 schematically shows the cash unit in Fig. 3 and its banknote readers.

DETAILED DESCRIPTION OF EMBODIMENTS

[0008] The illustrated embodiments will now be described in more detail with reference to the accompanying drawings.

[0009] Fig. 1 schematically illustrates how a cash management system 1 or a banknote handling system is designed. The cash management system 1 comprises a cash unit 2, a cash register unit 3 and a receipt printer 4. The cash unit 2 is, among other things, configured to store banknotes which are fed - by a feeding device 5 - to a storage box 6 arranged in the cash unit 2. The feeding device 5 includes a cash reader (shown in Fig. 2, with reference number 12), preferably a banknote reader with at least one of the following: a colour detector, a size detector, a UV detector, a detector for magnetic paint, a detector for the metal strip in a banknote and an IR detector for identifying cash, in this case a banknote. The feeding device 5, or only the cash reader, is provided with a click arrangement (not shown) so that it can be quickly and easily replaced in the event of a disruption.

[0010] The storage box 6 is removable and provided with an RFID transmitter (shown in Fig. 4) which is detectable by a sensor (not shown) arranged in the cash unit 2, when the storage box 6 is in place in the cash unit 2. When the storage box 6 is in place in the cash unit 2, the storage box 6 is opened so that it may retrieve the banknotes fed therein. However, when a user lifts the storage box 6 out of its position in the cash unit 6, the connection between the RFID transmitter and the sensor is disrupted, which results in that the storage box 6 locks itself so that no unauthorized person can open it. Further, the cash unit 2 comprises a display 7 which presents relevant information, as will be explained further below. In an alternative embodiment, the RFID transmitter may be an ID chip. The cash unit 2 may also comprise a sensor which notifies the cashier when the amount of cash or number of banknotes reaches a certain value. Each cash unit 2 may be configured with its own ID number so that each cash unit 2 can be associated with a cashier, op-

erator, cash register unit, etc.

[0011] The cash register unit 3 may be a standardized cash register unit which is used in today's stores but which according to this invention further includes a program configured to operate together with the cash unit. The cashier enters items, their price and quantity in the cash register unit 3 so that a total sum of the purchase by the customer is calculated. The information regarding the price of each item, the number of items and the total sum of the purchase is sent to the receipt printer 4 which prints out a receipt for the customer. The same information, or only the information about the total sum, is then sent from either the cash register unit 3 or the receipt printer 4 to the cash unit 2 which registers the same. The same information may also be sent to a back office computer 8 for registration and storage.

[0012] In order to make it possible to transmit information between the various units 2, 3, 4, 6 a control device 9 is arranged in the cash unit 2. The control device 9 includes three RS 232 channels 10a, 10b, 10c configured to transmit different types of information. The first channel 10a is configured to primarily receive information from the cash register unit 3 and the receipt printer 4 which contains the total sum for a purchase. The third channel 10c is configured to receive information from the cash unit 2 regarding how much has been deposited to the storage box 6. The second channel 10b is configured to send information from the first and third channels 10a, 10c to the back office computer 8. Further, the control device 9 includes a fourth channel 11 which transmits information to the cash unit display 7 on which the information is presented. The information sent to the cash unit display 7 is a difference between the total sum of all sales during a time period and the total sum of cash which has been deposited in the cash unit 2 during the same period of time. Preferably, the control device 9 continuously reads the cash unit 2, the cash register unit 3 and/or the receipt printer 4, and continuously transmits the information to the back office computer 8. Also information which can be read on the cash unit display 7 may also be continuously updated. In an alternative embodiment of the cash unit 2, the display 7 thereof may be configured to - in an inactive mode, i.e. when no banknotes are fed into the cash unit - be switched off and switched on in an active mode, i.e. when the cashier feeds in cash, in order to show its information.

[0013] Various types of communication means may be used, e.g. the RS-232/485 Wired connection mentioned above, XBee Wireless communication, a printer that prints out directly from the cash unit or a combination of these communication means.

[0014] At the end of a shift, the cashier closes the cash register in order to calculate the total amount of cash in the register and compares it to the total sales amount. Therefore, in order to facilitate closing after each shift the difference between the total amount of all sales during a time period and the total amount of cash deposited in the cash unit 2 during the same time period is shown, which

means that the cashier only needs to feed the remaining amount into the cash unit 2 and submit it to management staff. This reduces the risk of errors when calculating and makes the work after closing a shift less time consuming. For large department stores, this cash management system 1 saves a lot of time which leads to lower costs.

[0015] Further, the cash management system 1 may be configured to receive different types of currencies. Preferably, the cashier can change the currency for the cash unit 2 and the cash register unit 3 by means of e.g. a keypad (not shown) on the display 7 of the cash unit 2.

[0016] Figs 2-9 schematically illustrate the cash unit with its constituent units according to an embodiment.

[0017] The cash management system is a system for depositing banknotes which will secure and streamline cash handling, primarily within retail stores and fast food. The closed cash management systems which are available on the market today can contribute to certain security and efficiency, but they require equipment which is so expensive that only 15-20% of the customer base is willing to invest in such equipment. The known cash management systems are also considered to be too slow to maintain an effective flow of customers at the register. The cash management system according to this invention is an entirely closed system which, due to its simple construction, involves an investment for the customer which is less than 10% of the investment for a system available on the market today.

[0018] The inventive cash management system is arranged in such way that the cashier continuously deposits banknotes into the cash unit, which detects each banknote and feeds it down into the storage box making the banknotes inaccessible to the operator as well as others. The deposit to the cash unit is very fast (0.5 seconds/banknote) which is essential for the cashier to be able to work efficiently. The operator can easily switch the cash unit between different currencies.

[0019] The cash unit continuously transmits information about the number, the denomination and the sum of the banknotes deposited via wireless or wired communication to the cash office or other recipients. Before the operator ends his/her shift, he/she reads the display and deposits the amount shown. Thus, the time-consuming work with reporting the day registers is completely avoided.

Claims

1. A cash management system comprising a cash unit (2) for depositing cash, a cash register unit (3) which is configured for entering the price of at least one item and which is connected to the cash unit (2), and a receipt printer (4) for dispensing receipts, which is connected to the cash register unit (3) and/or the cash unit (2), wherein the cash unit (2) is configured to retrieve or receive information regarding the quantity of items, the price per item and/or the total

number of items from the cash register unit (3) and/or the receipt printer (4).

to any of one of the claims 1-7, comprising the steps of:

2. A cash management system according to claim 1, wherein the cash unit (2) comprises a removable storage box (6) for deposited cash, which is configured to be locked when removed from the cash unit (2). 5
 - entering an amount of an item into the cash register unit (3),
 - depositing cash in the cash unit (2),
 - reading the difference between the total sum of entered items and the total sum of deposited cash in the display (7) of the cash unit (2), and
 - depositing the difference in cash between the total sum of entered items and the total sum of deposited cash in the cash unit (2).
3. A cash management system according to claim 1 or 2, wherein the cash unit (2) is configured to receive banknotes. 10
4. A cash management system according to claim 3, wherein the cash unit (2) comprises a display (7) and a control device (9) which is configured to: 15
 - retrieve information on the total sum of entered items from the cash register unit (3),
 - retrieve information about the total sum of deposited cash in the cash unit (2), 20
 - calculate the difference between the total sum of entered items and the total sum of deposited cash, and
 - display the difference on the display (7) of the cash unit (2). 25
5. A cash management system according to any one of the preceding claims, wherein the system is connected to a storage unit which is preferably arranged in a back office computer (8) and which is configured to store information sent from the cash unit (2) and the cash register unit (3). 30
6. A cash management system according to any one of the preceding claims, wherein the cash unit comprises a cash reader with at least one of the following: a colour detector, a size detector, a UV detector, a detector for magnetic paint, a detector for the metal strip in a banknote and an IR detector for identification of a banknote. 35 40
7. A cash management system according to any one of the preceding claims, wherein the cash unit (2) comprises a currency control device for adjusting the currency fed into the cash register unit (3) and the cash unit (2). 45
8. A cash unit for cash management system, comprising a feeding device (5) for cash, a removable storage box (6) for deposited cash, and a display (7) presenting the difference between the total sum of entered items and the total sum of deposited cash. 50
9. A cash unit according to claim 8, wherein the display (7) of the cash unit (2) is a LCD display. 55
10. A method for a cash management system according

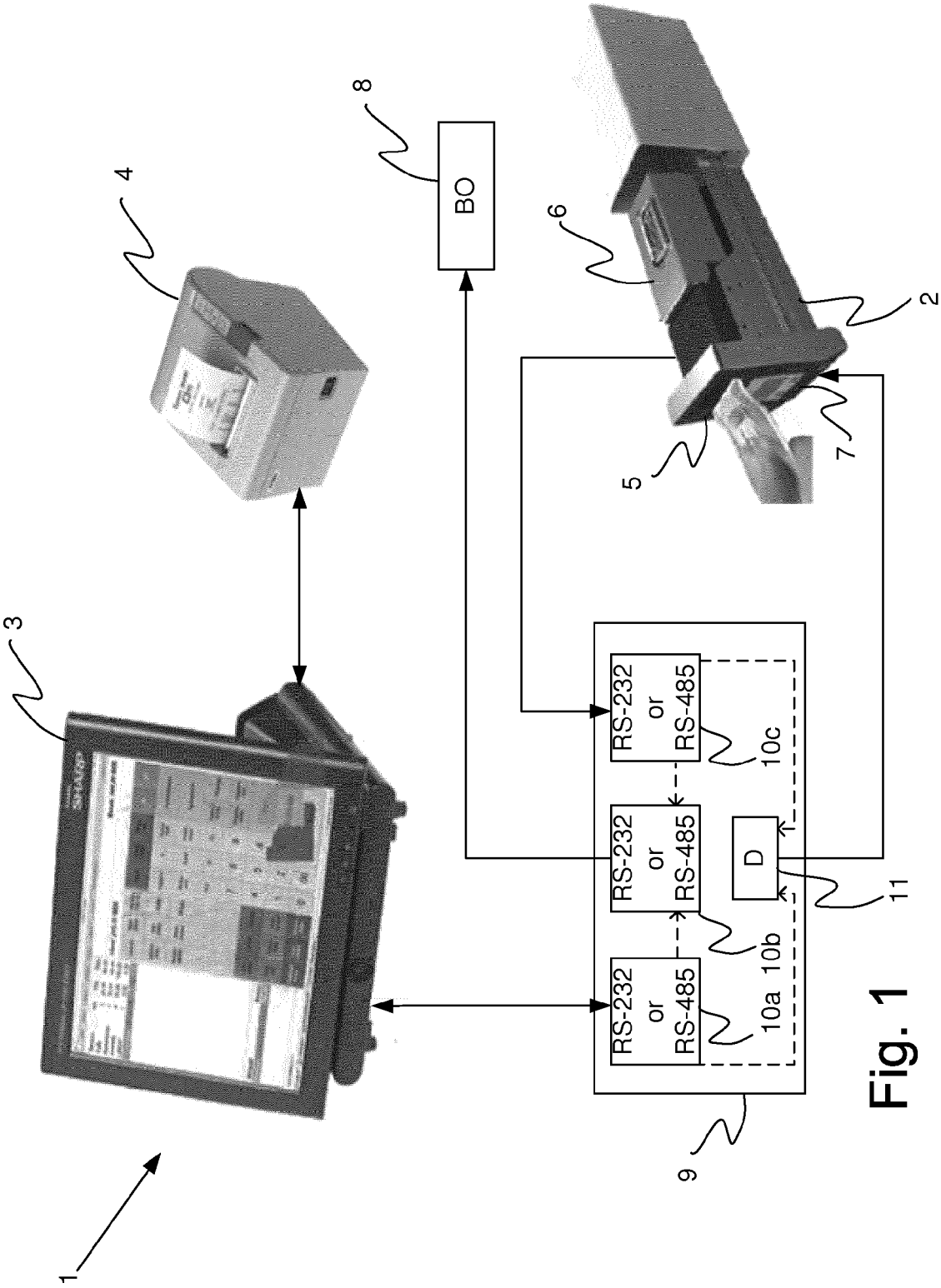


Fig. 1

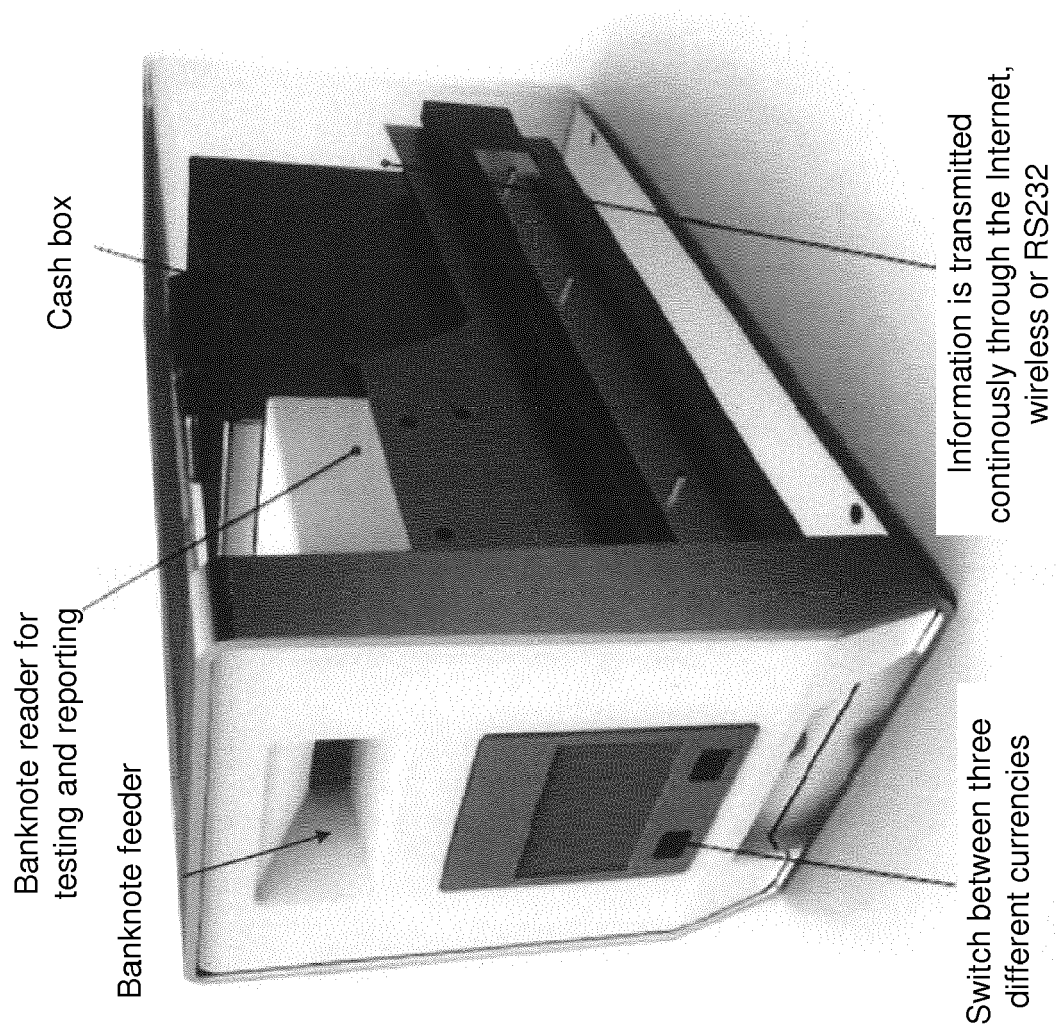


Fig. 2

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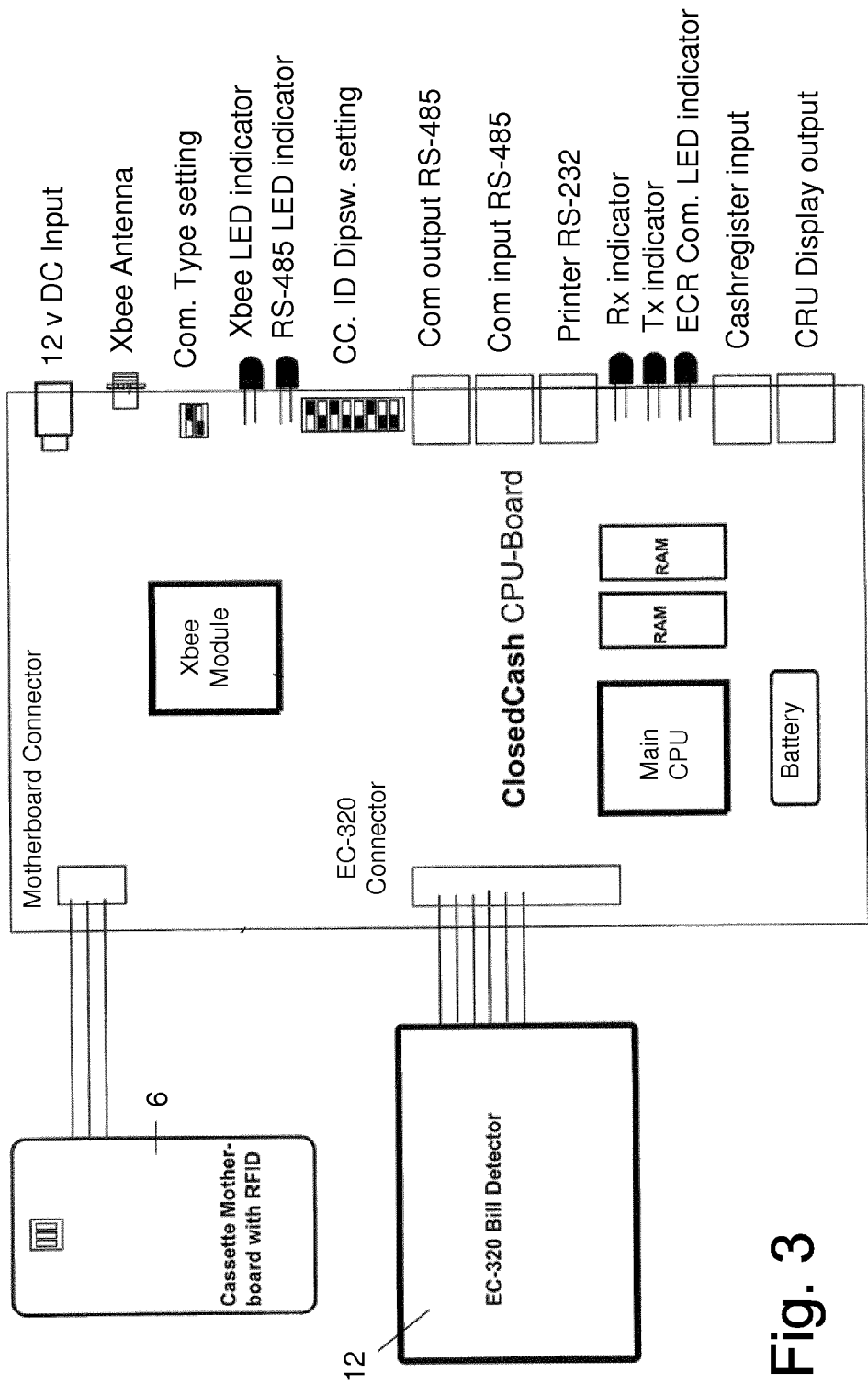


Fig. 3

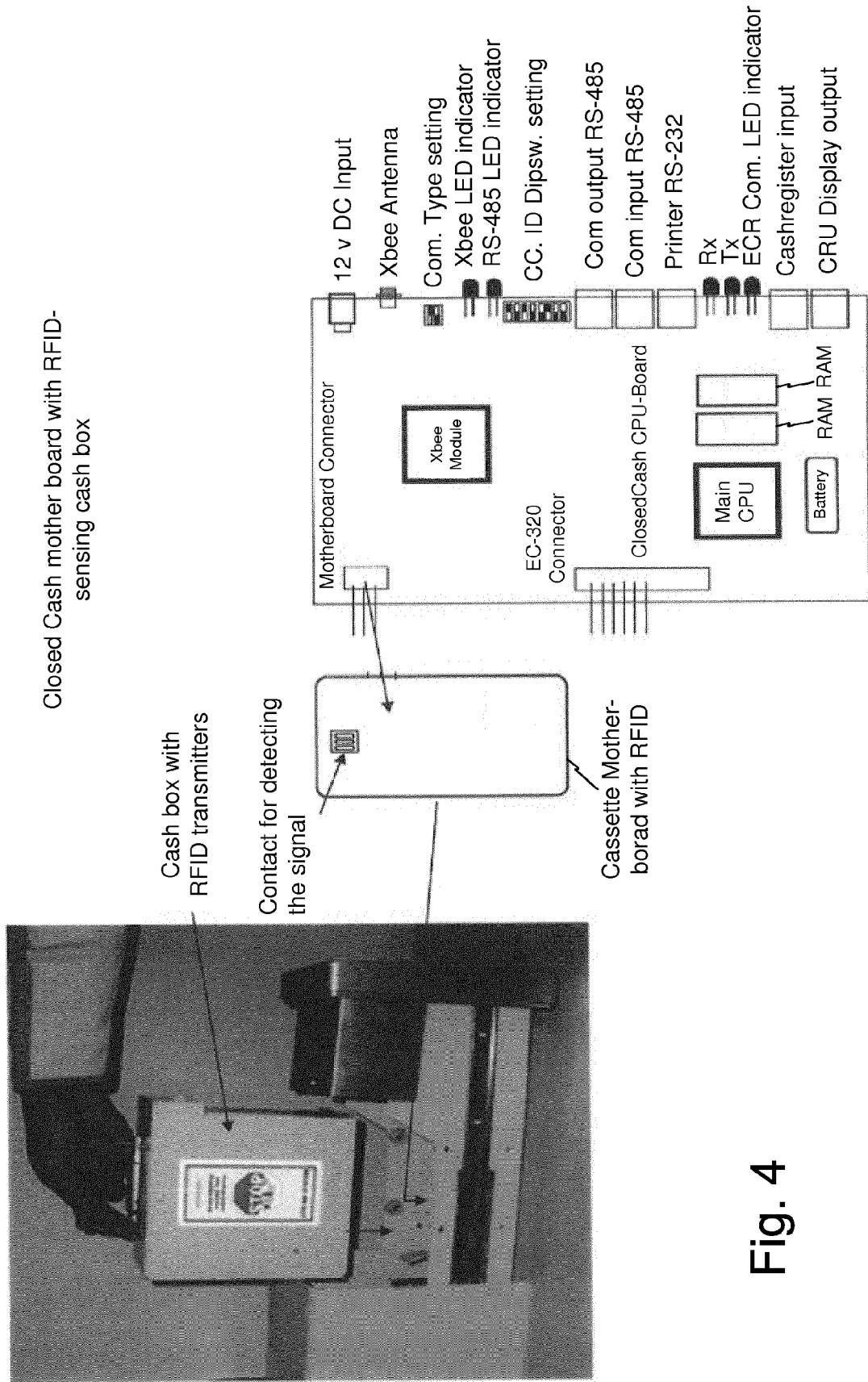
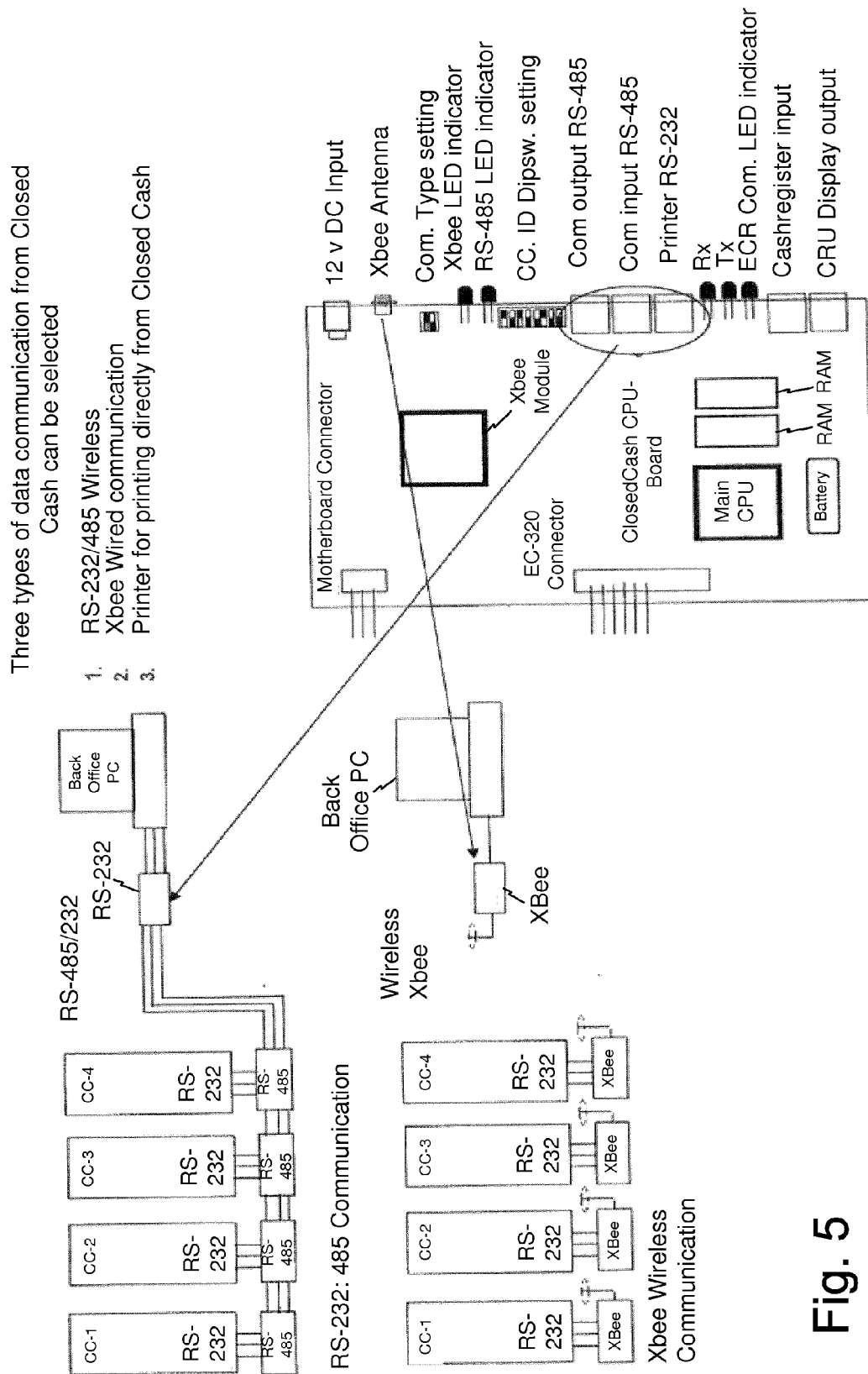


Fig. 4



Xbee RS-232 Module for wireless communication

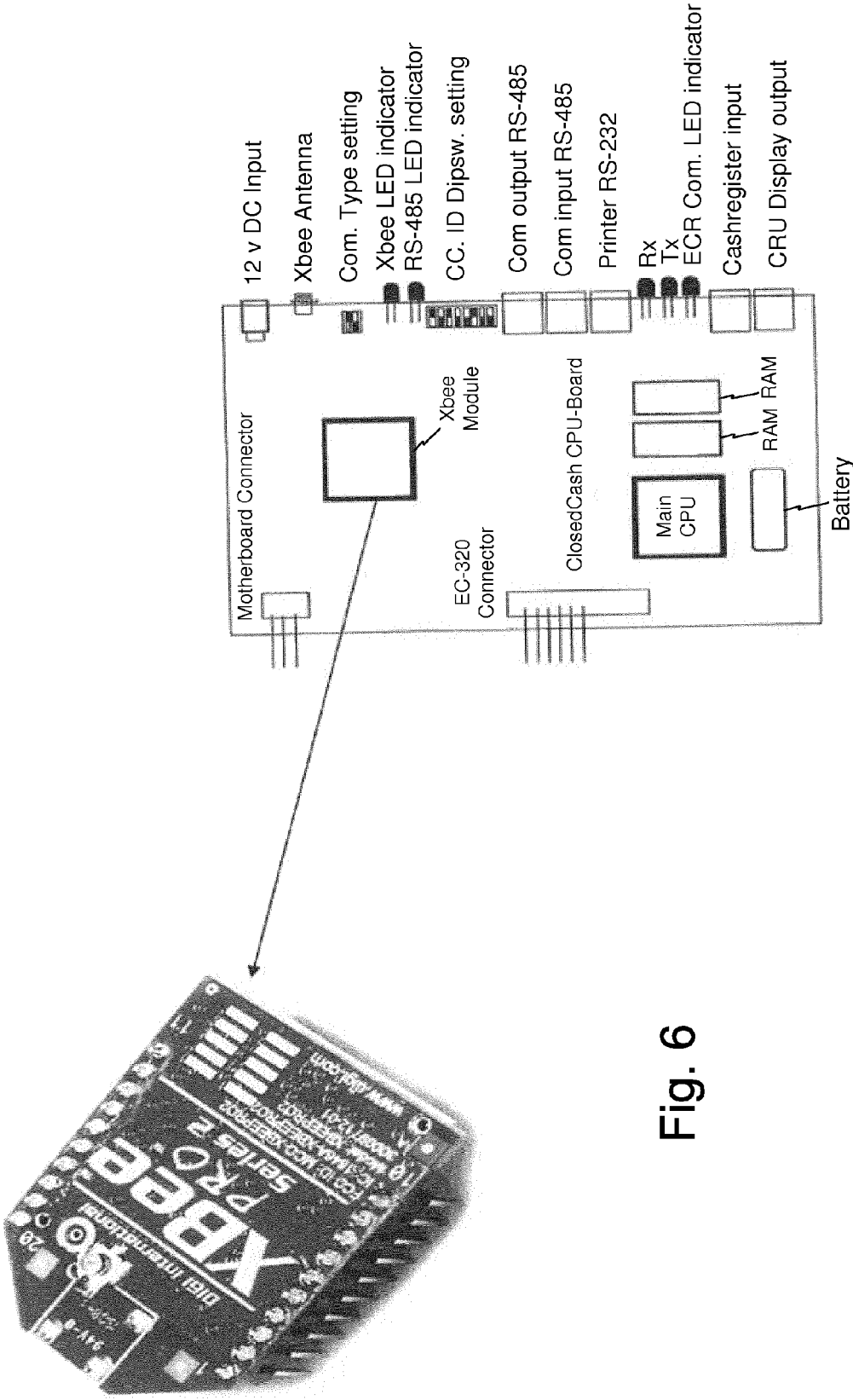


Fig. 6

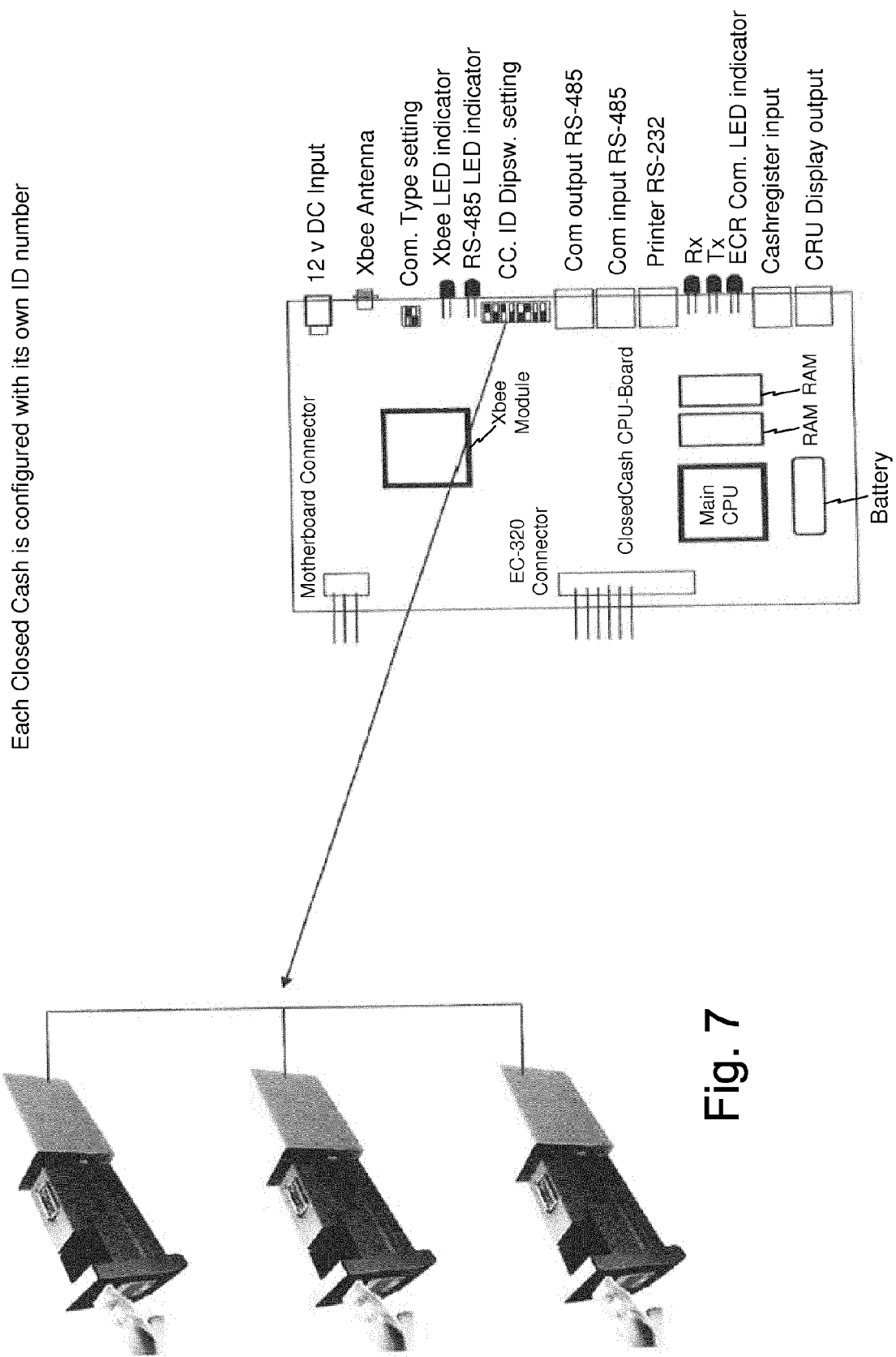


Fig. 7

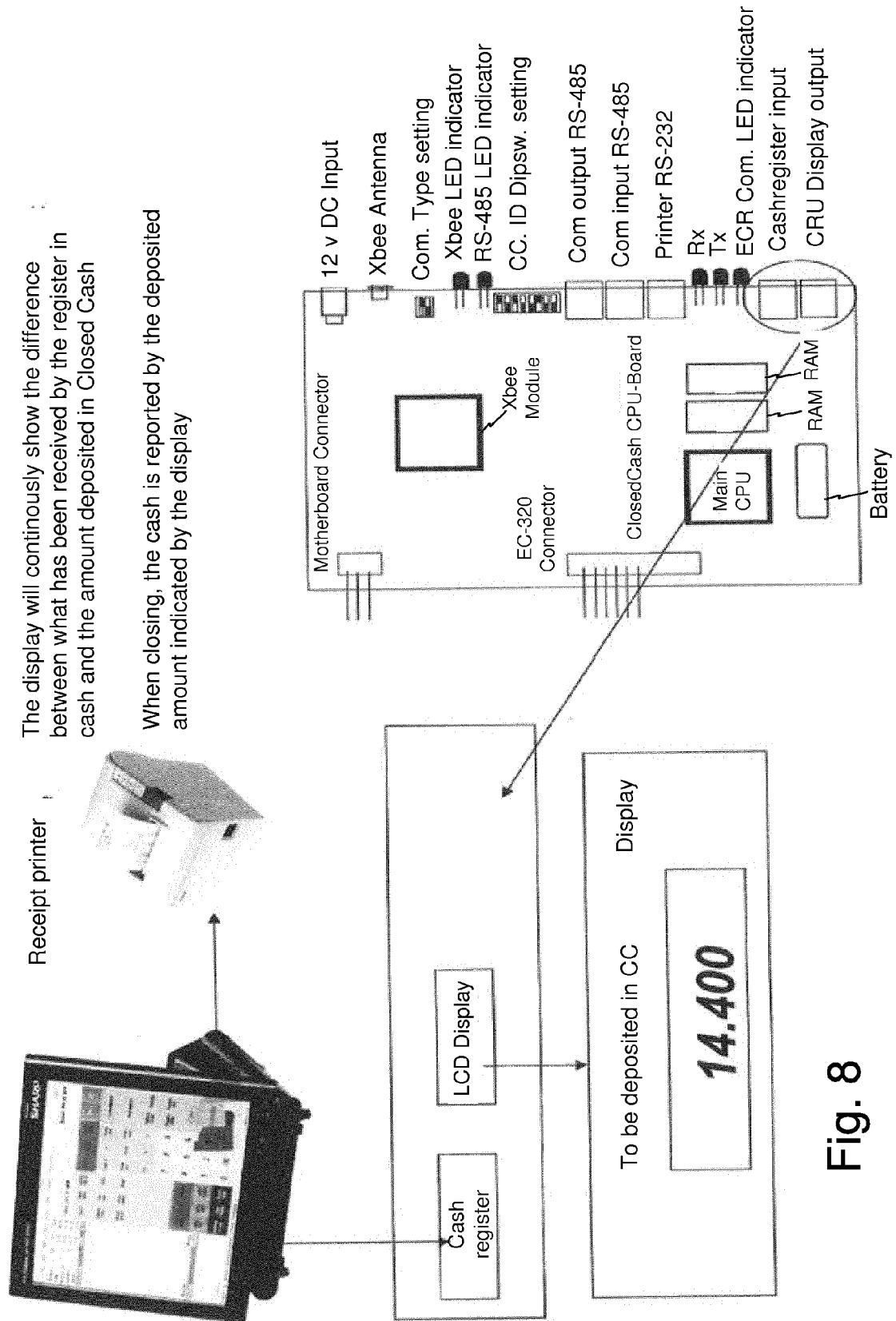


Fig. 8

Banknote reader

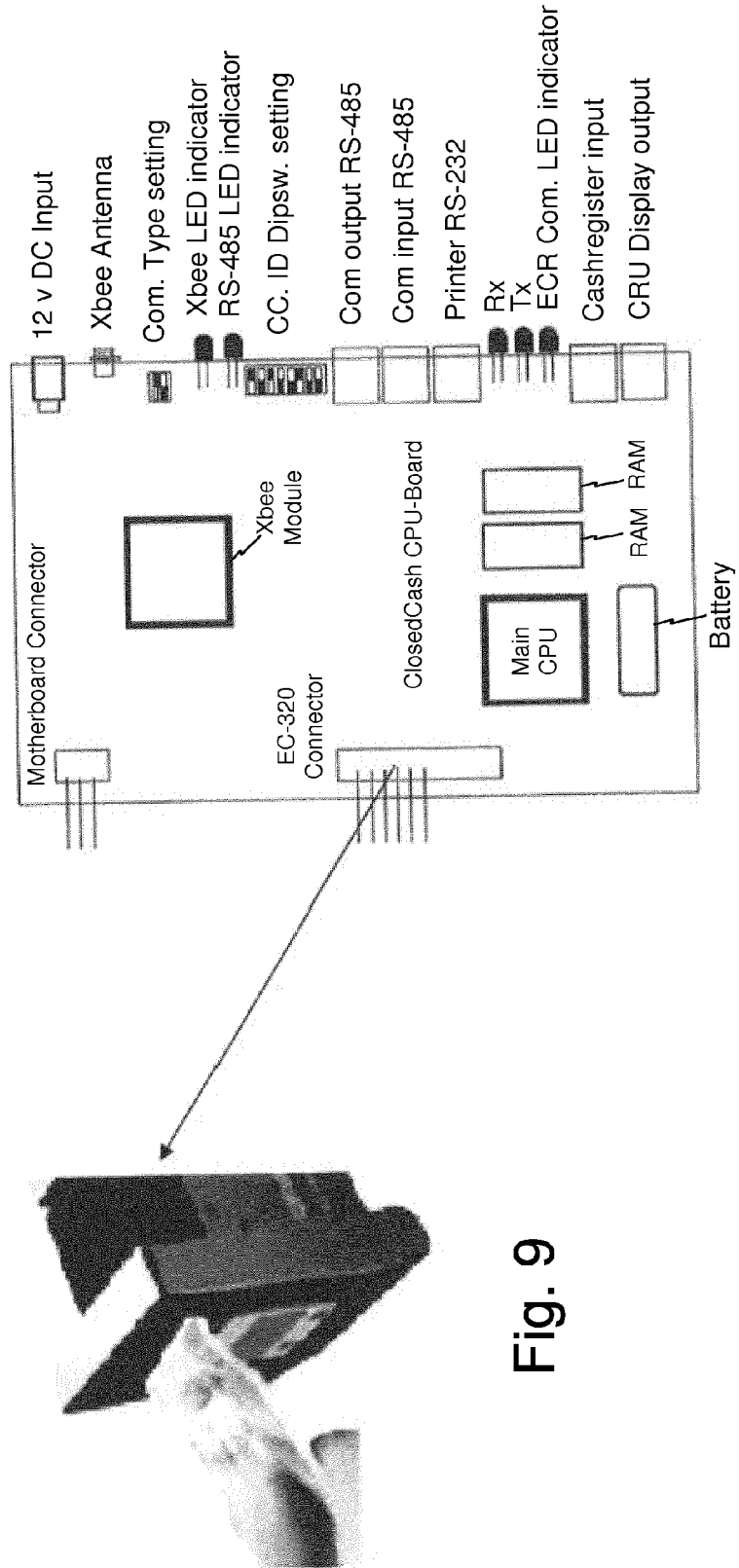


Fig. 9



EUROPEAN SEARCH REPORT

Application Number
EP 12 18 4138

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 944 163 A (KEITH III JASPER NEWTON [US] ET AL) 31 August 1999 (1999-08-31) * abstract * * figures 1,7-10 * * column 2, line 59 - column 4, line 9 * * column 10, line 43 - column 11, line 25 * * column 17, line 33 - column 20, line 3 * -----	1-10	INV. G07F9/06 G07G1/00 G07D11/00
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 14 February 2013	Examiner Diepstraten, Marc
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 12 18 4138

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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14-02-2013

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