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(56) Documents Cited:
WO 2005/096237 A1 **WO 2001/061664 A**
US 6032127 A **US 20060289637 A1**
US 20060208072 A1 **US 20020170961 A1**

(58) Field of Search:
Other: **Online: WPI, EPODOC**

(54) Abstract Title: **Automated shopping system using RFID tags**

(57) A conventional retail trolley 6 includes a built in LCD panel 5 to display item amount 4 and price of item 3 to the customer when filling the trolley 6. The items placed in the trolley have RFID tags read by tag readers in the trolley and at an automated the checkout where items 3 are read by the RFID reader and shown on a display. When payment is made a receipt can be printed and a gate 10 is automatically opened allowing customer to exit.

Figure 3

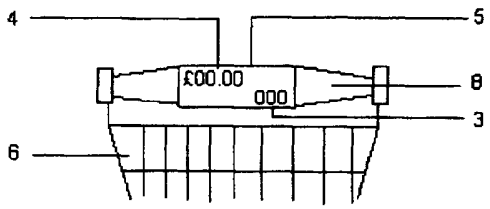

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Figure 1

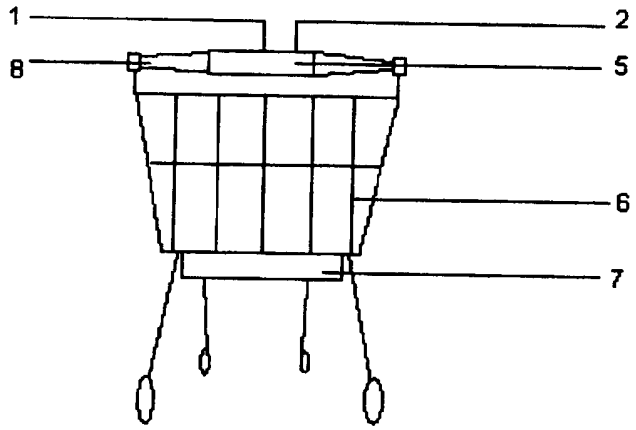


Figure 2

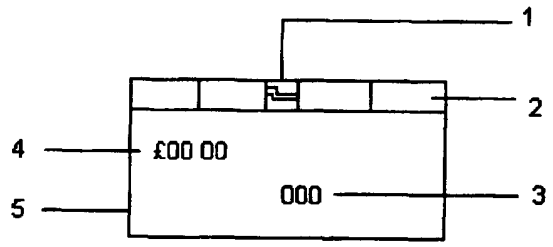


Figure 3

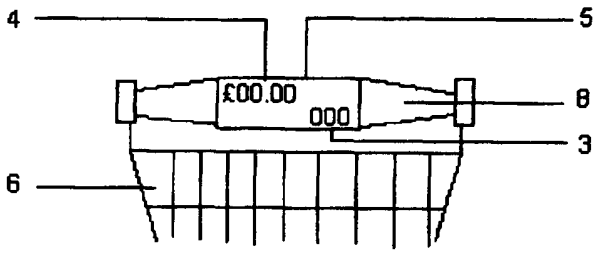
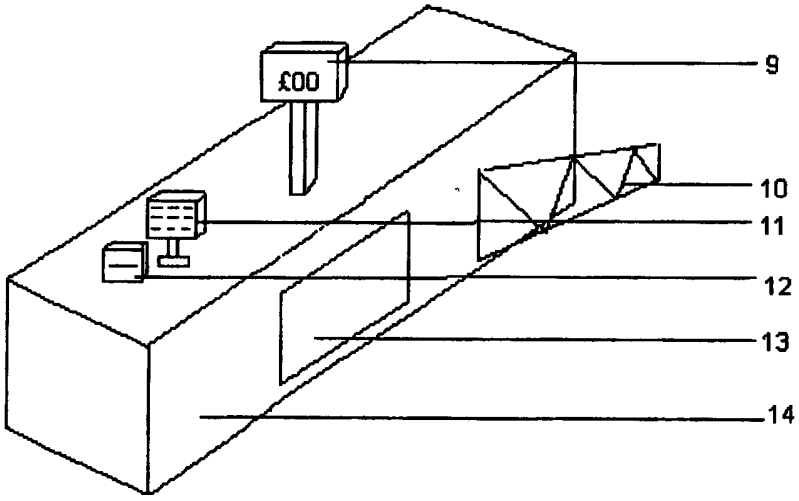


Figure 4



Automated shopping system

This invention relates to a system that uses RFID tags to speed up the shopping and payment process through unmanned checkouts.

When customers use retail outlets they use conventional retail trolleys to collect their goods when they have completed their shop they then commence to the nearest checkout, normally there is a queue, and they have to unload all the goods from the retail trolley onto a conveyor belt to allow the cashier to scan each item, the goods are then packed into bags provided by the retail outlet and re-loaded into the retail trolley, once they have paid they then push the retail trolley to the exit, all of this requires a considerable length of time spent at the checkout.
Our invention solves this problem in the following way, the retail trolley has a built in LCD panel which displays the total amount of items and the price of the last item placed in the retail trolley, built into the display are solar panels to provide the power to run the LCD display so making it maintenance free.

There is an RFID reader built into the LCD display to read the tags on each item as it is placed into the retail trolley, underneath the retail trolley is a container which holds plastic shopping bags when the customer brings the retail trolley into the store a sensor at the entrance releases the catch on the container and the bags are made available, each bag has an RFID tag so as it is taken out of the container it will be read by the reader on the retail trolley and charged (optional) to the total bill at the checkout.
The customer can fill the bags as they walk around the store thus saving time later, the tag reader on the checkout can read the tags through the bags.

At the checkout the customer simply pushes the retail trolley up to the counter, the tag reader built into the counter then reads the total amount of tags in the retail trolley and displays the amount of items and the total price to pay on the counter display, the customer can then place their loyalty points card and debit/credit card into the display, type the pin number in and payment is taken deducting any available points from the total bill, a receipt is printed and the gate is opened allowing the customer to leave the shop, all of this has dramatically speeded up the time spent in the store and alleviates any queues.
The invention will now be described solely by way of example and with reference to the accompanying drawings in which:

Figure 1 shows a conventional retail trolley with LCD panel built into the handle.

Figure 2 shows the LCD panel and its layout with solar strip for power supply and RFID reader.

Figure 3 shows retail trolley with LCD panel built into custom fitted handle.

Figure 4 shows retail checkout with RFID reader and card payment system.

In figure 1 a conventional retail trolley 6 takes an LCD panel 5 built into handle 8, attached to the underside of the retail trolley 6 is a shopping bag dispenser 7 the customer places the bags in the retail trolley 6 and fills them making it easier to unload later, each bag has an RFID tag and can be charged for as it enters the retail trolley 6 the LCD panel 5 is powered by a solar panel 2 and is fitted with an RFID tag reader 1 this reads the tags on the items placed in the retail trolley 6 and displays the amount of items 3 and the value of the last item 4 placed in the retail trolley 6 on the LCD panel 5.

Figure 2 shows the LCD panel 5 with built in solar panels 2 to power the unit the LCD panel 5 displays the number of items 3 in the retail trolley 6 and the item price 4, the information displayed is received from each items RFID tag that is read by the RFID reader 1 which is part of the LCD panel 5.

Figure 3 shows the handle 8 and LCD panel 5 with item price 4 and number of items 3 attached to retail trolley 6 the LCD panel 5 can de fitted to any existing retail trolley 6 and can be incorporated into any handle design.

Figure 4 shows the automated checkout 14 with attached RFID reader panel 13 this reads the tag attached to items in the retail trolley 6 and displays item price 4 and number of items 3 on the display 9 the customer can cross check information displayed on the LCD panel 5 attached to the retail trolley 6 payment is taken via debit/credit card and pin number entered in unit 11 a receipt is printed from printer 12 and on completion of transaction gate 10 is opened and customer can push the retail trolley to exit.

Claims

1. An automated shopping system comprising of LCD panel built into a conventional retail trolley handle which displays price and amount of items in the trolley, this can be cross checked at the automated checkout, there is no need to unload the trolley onto a conveyor belt as the RFID reader reads the tags in the trolley and displays the price and amount of items on the checkout display, payment can be made by entering debit or credit card manually, a receipt is printed when transaction is complete then the gate is opened automatically so customer can exit.
2. An automated shopping system according to claim 2 in which the use of RFID tags on products will be used to supply information to RFID readers placed on the trolley and checkout.

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Application No: GB0704052.0 **Examiner:** Tom Sutherland

Claims searched: 1 and 2 **Date of search:** 13 April 2007

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1 & 2	WO 2005/096237 A1 (PRECISA INSTRUMENTS) Whole document.
X	1 & 2	US 2006/0289637 A1 (BRICE et al) See paragraphs 0070 and 0071.
X	1 & 2	US 2006/0208072 A1 (KU et al) Whole document.
X	1 & 2	US 2002/0170961 A1 (DICKSON et al) Whole document. Note paragraph 0029.
X	1 & 2	US 6032127 A (SCHKOLNICK) Whole document. See particularly column 8 line 30 to column 9 line 33.
A	1	WO 01/61664 A (BOTTIGLIENGO) See Fig. 1. An example of an automated checkout with security gates.

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category	P	Document published on or after the declared priority date but before the filing date of this invention
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC

International Classification:

5

Sub Class	Sub Group	Valid From
G07F	0007/02	01/01/2006
B62B	0003/14	01/01/2006