(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 531 265 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **92830464.1**

(51) Int. Cl.5: **A47F 9/04**, G07G 1/00

(22) Date of filing: **02.09.92**

(30) Priority: **05.09.91 IT MI912353**

(43) Date of publication of application:
10.03.93 Bulletin 93/10

(84) Designated Contracting States:
AT BE CH DE ES FR GB GR LI LU NL SE

(71) Applicant: **A.W.A.X. PROGETTAZIONE E RICERCA S.r.l.**
Via per Sassuolo, 1863
I-141058 Vignola (Modena)(IT)

(72) Inventor: **Cappi, Angelo**
Viale Vittorio Veneto, 586
Vignola, Modena(IT)
Inventor: **Rimondi, Renato**
Via de Gasperi 1
Bazzano, Bologna(IT)

(74) Representative: **Pizzoli, Pasquale et al**
c/o Società Italiana Brevetti Via G. Carducci 8
I-20123 Milano (IT)

(54) Check-out counter for supermarkets, comprising a pair of bag-dispensing devices provided with scanner with relevant monitor, as well as a cash register connected therewith.

(57) Check-out counter for supermarkets and the like, comprising a cash desk (1) of known type for a cashier (12), a pair of counters (2, 2') set along the two opposite sides of the cash desk (1), and incorporating each a scanner (4,4') provided with monitor (5, 5'), a hopper (8, 8') with an underlying bag dispensing device provided with balance, as well as a pair of conveyor belts (11, 13 and 11', 13') arranged in succession, the second conveyor belt (13, 13') of the said pair weighing upon the balance of the bag dispensing device incorporated under each hopper (8, 8').

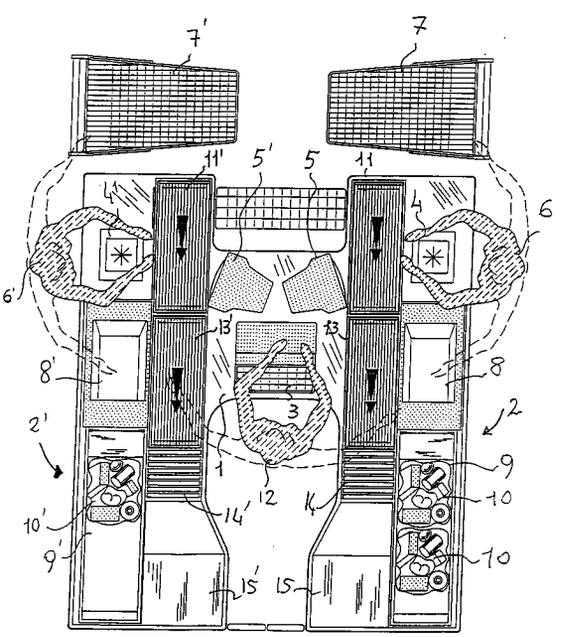

Fig.1

EP 0 531 265 A1

The present invention relates to check-out counters for supermarkets, and in particular a check-out counter comprising a pair of devices for dispensing and opening bags taken from a reel, said devices being provided with balance and scanner with relevant monitor, as well as a third scanner or cash register interposed between the bag-dispensing devices, each device being associated to a pair of series connected conveyor belts, the second of which is linked to the balance of the respective bag-dispensing device.

It is known that devices have been recently introduced in supermarkets and in other similar points of sale to dispense plastic bags to the customers and to allow them to easily introduce in such bags - kept open by the device - the items they had bought and duly paid at the check-out counter. Such known devices are therefore placed downstream the check-out counters of the supermarkets and are described e.g. in the European Patent Application No. 90830545.1 filed by the same Applicant. Analogous devices are also known, to be placed upstream the check-out counters of the supermarkets so as to allow the customers to enter by themselves the purchased goods and to come to the check-out counter just to pay the due amount. Devices of this kind are described e.g. in the European Patent Application No. 91830474.2 filed by the same Applicant. Such known devices also comprise a scanner connected to a balance so as to allow the supermarket customer, besides putting into bags the items he purchased, to carefully scan such items so that he should stay at the check-out counter only and exclusively for a time strictly necessary to pay the bill.

Such known devices, though offering the advantage of considerably reducing the forming of queues at the check-out counters, are not exempt from inconveniences. For instance, it often happens that the customer is not able to properly use the scanner, or that the characteristic data of the purchased item are located in such a way as not to be easily detected by the scanner. Such inconveniences make it absolutely necessary to have the customer assisted by skilled personnel, and this obviously contrasts with the tendency of cutting the staff costs down to a minimum. It was therefore thought of utilizing the existing staff, e.g. the cashiers of the check-out counters, to give the customer the necessary assistance.

It is therefore an object of the present invention to provide a device for the self-service scanning and the automatic putting into bags of the items purchased by a customer in a supermarket, which device should not be installed upstream or downstream the check-out counters of the supermarkets, but should be apt to be installed at the check-out counter itself so as to allow the cashiers to give the customers the necessary assistance.

This object is achieved according to the present invention by a check-out counter which incorporates a pair of devices for dispensing and opening plastic bags from a continuous web reel each provided with scanner and monitor, as well as a third scanner and/or cash register to be operated by the cashier, which is connected to said scanners.

The check-out counter according to the present invention offers the advantage to allow the customer to hand directly over to the cashier the items he was unable to scan and that the cashier can thus enter either by a pen scanner or manually by the cash register connected to the scanners.

Another advantage offered by the check-out counters according to the present invention is that a single staff can give the necessary assistance to two different customers, with a consequent saving of personnel and of installation room.

These and other advantages of the check-out counter according to the present invention will be clear to the experts in the art by the following detailed description of one embodiment thereof, with reference to the attached drawings wherein:

- FIGURE 1 shows a perspective view of the check out counter according to the present invention; and -
- FIGURE 2 shows a flow chart depicting the operation of the check-out counter according to the present invention.

With reference to Figure 1, the check-out counter according to the present invention consists of a central desk 1 for the cashier, interposed between two parallel side counters 2, 2' which are simultaneously available to two different customers. The desk 1, of known kind, comprises a cash register 3 with underlying cash, as well as a pen scanner, if any.

Counter 2 comprises a scanner 4, provided with monitor 5, by which the customer can enter the items he purchased and carried there by means of the shopping cart 7.

Next to scanner 4 is placed the hopper 8, through which customer 6 can let fall into the underlying open bags the items he has already entered. In fact, below hopper 8 is mounted a bag dispensing device of the kind illustrated in the above mentioned European Patent Application No. 90830545. Such a device is also provided with balance according to the teachings of the a.m. European Patent Application.

At the other side of hopper 8 there is a collecting station 9 wherein gather bags 10 filled with the items purchased by customer 6 and ready to be taken away by him after he has paid the relevant bill. Between scanner 4 and the relevant monitor 5

is placed the conveyor belt 11 on which customer 6 can put the items he was not able to enter by scanner 4. Such items will be finally conveyed, through conveyor belt 11, to cashier operator 12 who will enter them either by a pen scanner or by hand by means of the cash register 3.

In line with conveyor belt 11 there is a second conveyor belt 13 on which the customer may place the items he prefers not to bag, because of their particularly fragile nature or their bulkiness. Such items, however, have already been duly entered by customer 6 by means of scanner 4 and therefore, when conveyor belt 13 begins moving in the direction of the arrow, the items will slide directly onto the set of rollers 14 to collect into end station 15, requiring no intervention on the part of cashier 12. The customer can finally take away such items from station 15 after paying the total bill to cashier 12.

Conveyor belt 13, unlike conveyor belt 11, is integral with the bagging device located under hopper 8, and therefore weighs upon the relevant balance. The structure of conveyor belt 13 is practically the same as that of the set of rollers being part of the device which is the subject matter of the a.m. European Patent Application No. 91830474.2. Thanks to this arrangement, the items already entered by customer 6 are subjected to a further weight check. If the weight detected by the balance upon which rests belt 13 tallies with the weight detected by the scanner, the item will be duly billed and will proceed towards the collecting station 15.

On the left of cashier 12 there is counter 2' which is parallel and structurally identical to counter 2. Customer 6' can thus use counter 2' while customer 6 is using the facing counter 2, after carrying the purchased items by cart 7'. Scanner 4', hopper 8', conveyor belts 11' and 13' are structured exactly like scanner 4, hopper 8 and conveyor belts 11, 13 incorporated in counter 2, and do not need therefore to be described any further.

As is apparent in Figure 1, cashier 12 occupies a central position and has both hopper 8 and hopper 8' within reach. The cashier will thus be able to easily insert in such hoppers the items she has entered and conveyed to her by customers 6 and/or 6' through conveyor belts 11 and/or 11'. In this manner cashier 12 can adequately help both customer 6 and customer 6' in accordance with the spirit of the present invention.

At any rate the possibility is confirmed for both customers to perform by themselves the entry of the purchased items,and to ask for the assistance of cashier 12 only in those isolated cases wherein they are not able to properly use scanner 4 or 4' on some of the purchased items. In fact, as already said above, the bag dispensing devices incorporated in counters 2, 2' are provided with balance and secure that the customer make no mistake, either inadvertent or deliberate, in entering the items he has purchased. Scanners 4 and 4' are connected by cable to the desk 1, so that the detected data are automatically added to those entered by cashier 12 by means of the cash register 3 and/or the supplementary pen scanner.

Referring now to Figure 2, there will be described in detail the operation of the check-out counter according to the present invention. For the sake of simplicity, the flow chart depicts the operation of the various devices with reference to the items purchased by customer 6 only. The devices incorporated in counter 2' work in the very same way with reference to customer 6'.

At the beginning of the operations the customer finds scanner 4 activated and uses it for entering the first item whose bar code is passed over the scanner. If this succeeds in reading such bar code, monitor 5 transmits this information to customer 2 who introduces the item into hopper 8 in such a way that it is placed in the underlying bag kept open by the bag dispensing device. As such device weighs upon a balance, it detects the actual weight of the item entered by scanner 4, and the weights are compared to each other. If both weights concur, scanner 4 is reactivated for the entry of the subsequent item, otherwise one will proceed as is described hereunder.

If the item entered by the scanner is of very large size, or particularly fragile, or the customer does not wish to put it anyhow in a bag through hopper 8, it is placed by the customer himself onto the conveyor belt 13. Conveyor belt 13 weighs too upon the balance incorporated in counter 2, whereby in this case too the actual weight of the item purchased and entered by the customer is detected. The actual weight thus detected is compared to the one detected by scanner 4 and if both weights concur scanner 4 is reactivated for the entry of a subsequent item.

On the contrary, in all those cases wherein the actual weight of an item does not tally with the one detected by scanner 4, the message "remove the last-packed product and retry" appears on monitor 5. The customer will act accordingly and, if the same message appears at the second passage before monitor 5, the customer will place such item on conveyor belt 11. The customer will repeat the above described operations until there is no more room available inside the bag, or until all of the items present in cart 7 have been processed.

In the first case the customer will depress a suitable pushbutton switch whereby the filled bag is closed and its overall weight is rechecked. At the same time a new bag will be detached from the reel and put under hopper 8 so that customer 2

can insert therein the other items he has purchased and entered.

In the second case, that is when the customer has processed all the items contained in cart 7, he depresses the pushbutton which sets in motion conveyor belt 13 bringing the items placed thereon up to the collecting station 15 from where the customer can take them for a special packaging or for the simple removal. Conveyor belt 11 shifts concurrently with conveyor belt 13 and carries next to cashier 12 all the items the customer has not been able to enter by means of scanner 4. When belt 11 stops (with belt 13 stopping at the same time), cashier 12 takes off the items placed thereon and enters them either by a pen scanner or manually by cash register 3. Once they have been entered, such items are inserted by cashier 12 in hopper 8 or, if they are bulky or particularly fragile articles, they are placed by the cashier on the collecting station 15. At this juncture the cashier can total the amount due by customer 2, who pays for it and leaves the cash point. Cashier 12 is thus left free and can thereby assist customer 2' until he completes his purchases similarly to what she did for client 2.

From what heretofore said is appears evident how cashier 12, besides carryin on her routine operations consisting in recording and collecting the amounts due by the customers, can at the same time assist them in the entry of those items whose codes are readable with difficulty by scanners 4 and 4'. A considerable time saving is thus achieved, because at one check-out counter as many as three persons - namely customers 2 and 2', as well as cashier 12 - are concurrently engaged in the entry operations of the items purchased by the customers, in their insertion in the bags, in the sorting out of the bulky or fragile articles and in the settlement of the final bills by the customers for the goods they purchased.

A contrivance to further assist customers in the completion of their purchases at the cash point is to furnish them with appropriate information by means of monitors 5, 5'. In fact such monitors, being interconnected with the bag dispensing devices and the relevant scanners, as well as with the conveyor belts, are an integral part of a check-out and control system capable to supply customers with all the necessary instructions. Such monitors, moreover, being also connected with desk 1 of cashier 12, enable a supplementing of information and a better relationship between the cashier and the customers.

Claims

1. Check-out counter for supermarkets and the like, comprising a cash desk (1) for a cashier (12), characterized in that it further comprises a pair of counters (2, 2') set a long the two opposite sides of the cash desk (1), and incorporating each a scanner (4, 4') provided with monitor (5, 5'), hopper (8, 8') with an underlying bag dispensing device provided with balance, as well as a pair of conveyor belts (11, 13 and 11', 13') set in succession, the second conveyor belt (13 and 13') of the said pairs weighing upon the balance of the bag dispensing device incorporated under each hopper (8, 8').

2. Check-out counter according to claim 1, characterized in that the scanners (4, 4'), the conveyor belts (13, 13') and the relevant bag dispensing devices incorporated under hoppers (8, 8') are electronically connected to the cash register (13) located at the cash desk (1).

3. Check-out counter according to claim 1 or 2, characterized in that the conveyor belts (11, 13 and 11', 13') of each pair are connected to each other in succession and to the same single control push button.

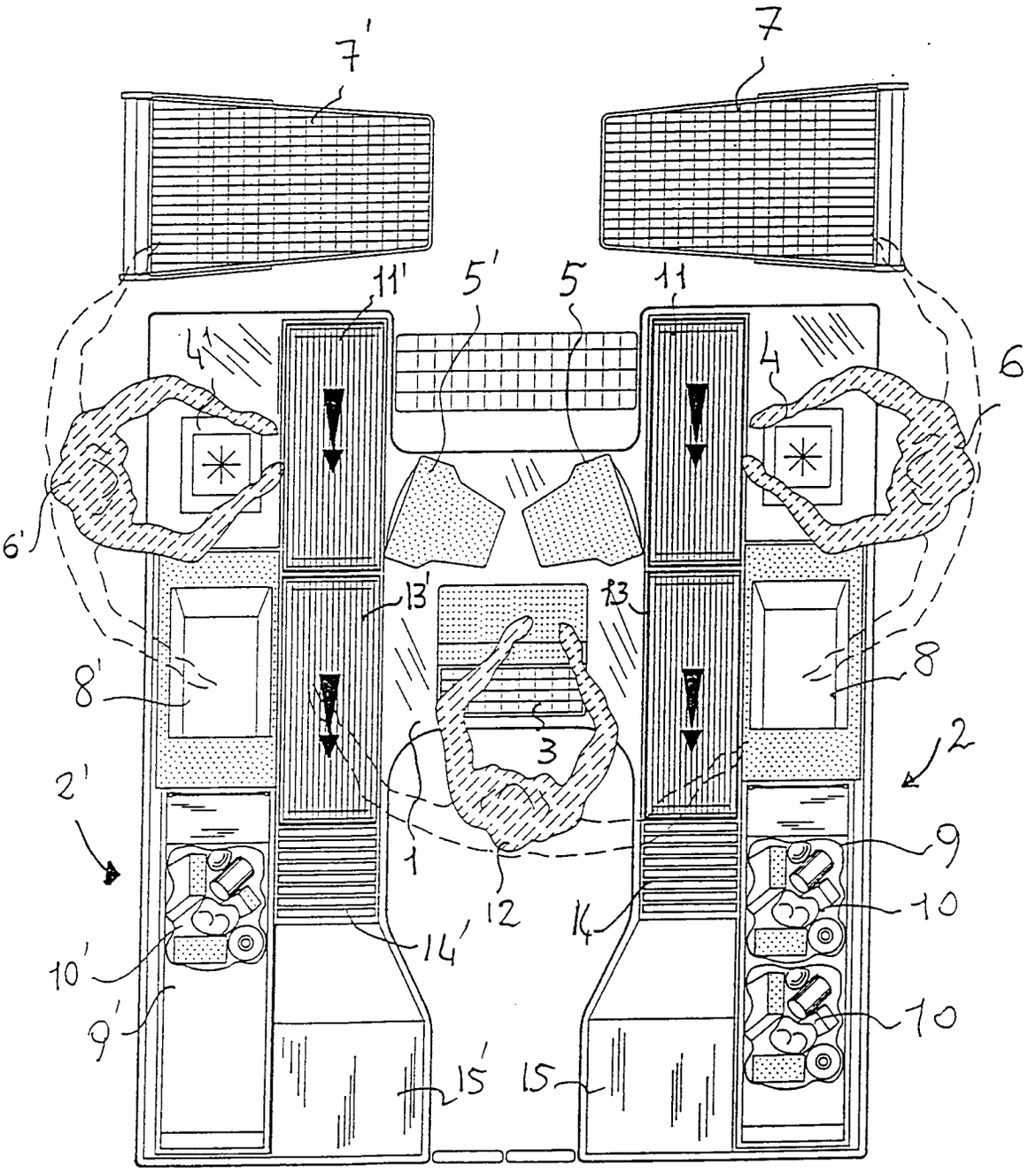

Fig.1

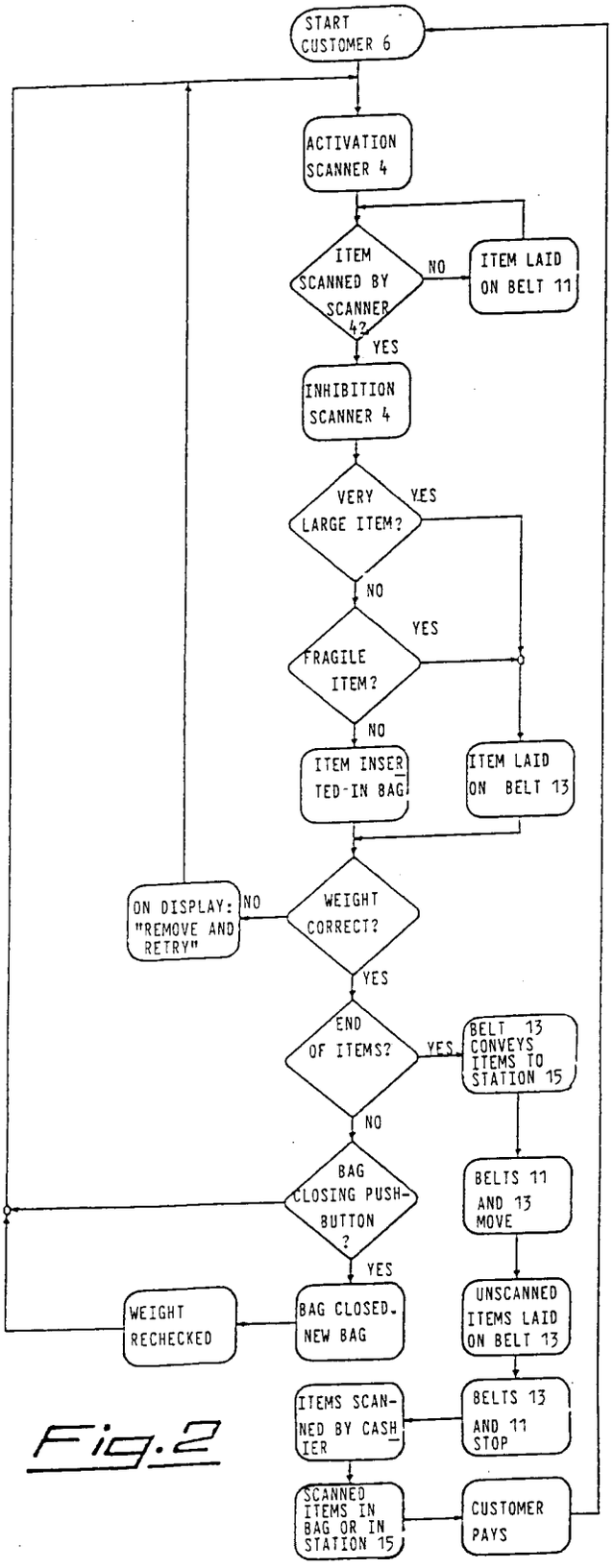
START CUSTOMER 6
ACTIVATION SCANNER 4
ITEM SCANNED BY SCANNER 4?
NO
ITEM LAID ON BELT 11
YES
INHIBITION SCANNER 4
VERY LARGE ITEM?
YES
NO
FRAGILE ITEM?
YES
NO
ITEM INSERTED-IN BAG
ITEM LAID ON BELT 13
WEIGHT CORRECT?
NO
ON DISPLAY: "REMOVE AND RETRY"
YES
END OF ITEMS?
YES
BELT 13 CONVEYS ITEMS TO STATION 15
NO
BAG CLOSING PUSH-BUTTON ?
BELTS 11 AND 13 MOVE
YES
BAG CLOSED. NEW BAG
WEIGHT RECHECKED
UNSCANNED ITEMS LAID ON BELT 13
ITEMS SCANNED BY CASHIER
BELTS 13 AND 11 STOP
SCANNED ITEMS IN BAG OR IN STATION 15
CUSTOMER PAYS

Fig.2

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 83 0464

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	WO-A-9 013 873 (HANSSON ET AL) * page 5, line 3 - line 11; figure 1 *	1,2	A47F9/04 G07G1/00
P,D, Y	EP-A-0 484 300 (A.W.A.X. PROGETTAZIONE E RICERCA) * page 2, line 9 - line 14; figure 1 *	1,2	
A	EP-A-0 403 670 (SIEMENS NIXDORF) * abstract; figure 1 *	1	
A	EP-A-0 396 218 (SONOCO) * column 10, line 48 - column 12, line 1; figure 10 *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

A47F
G07G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	12 NOVEMBER 1992	DE GROOT R.K.

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

EPO FORM 1503 03.82 (P0401)