

Description

BACKGROUND OF THE INVENTION

5 FIELD OF THE INVENTION

[0001] The present invention relates to a self-checkout system which is utilized as a form of accounting system at a super market, and so on.

10 DISCUSSION OF THE BACKGROUND

[0002] A conventional self-checkout system comprises a weighing unit for weighing a total weight of a basket in which an article(s) is contained before scanning, an accounting unit having a scanner for reading a barcode affixed on the article and having a settlement (transaction) function for executing a settlement based on a scanned data read by the scanner, and a collection base having a plastic bag holder that holds a plastic bag used for collecting a scanned article (s), to constitute an integrated self-check out system. The self-checkout system requires verification as to whether the article is registered correctly. Therefore, as shown in Japanese Laid-Open Publication No. 2002-367030, the total weight is weighed at an upstream and a downstream of a flow of the article in an accounting process. That is, a first weighing part for weighing the total weight of the basket in which the article(s) is contained before scanning, a scanner for reading the article information, and a second weighing part for weighing the total weight of a basket in which the scanned article (s) is contained are allocated on a large counter to constitute an integrated self-checkout system.

[0003] In the conventional self-checkout system, as explained above, each function is provided along the flow of the article in the accounting process. Thus, its usage is standardized, and the article needs to be transferred for a certain long distance, for example, a distance between an entry and an exit of the counter having a certain length along the flow of the article. Further, since the self-checkout system includes a large counter, its installation in a shop is limited, and it lacks the freedom of lay-out.

SUMMARY OF THE INVENTION

[0004] Accordingly, an object of the present invention is to provide a self-checkout system expanding the degree of freedom of lay-out.

[0005] To achieve the object of the present invention, a self-checkout system is provided which includes: (i) an accounting unit which includes a scanner to scan at least one article to read data of the article, and which executes a transaction based on the read data of the article, and (ii) a collecting base which includes a loading surface for supporting the scanned article, and a weighing scale for weighing the article supported by the loading surface. The accounting unit and the collecting base are formed as separate units such that an arranging order and an arranging direction of the accounting unit and the collecting base are changeable.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] A more complete appreciation of the present invention' and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

- Fig. 1 is a perspective view showing an embodiment of the present invention;
- Fig. 2 is a plane view conceptually showing a lay-out of the embodiment;
- Fig. 3 is a side view showing bodies of a shopping basket, an accounting unit and a collecting base of the embodiment;
- Fig. 4 is a perspective view showing another lay-out of the embodiment; and
- Fig. 5 is a perspective view showing another lay-out of the embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0007] An embodiment of the present invention will be explained with reference to Figs. 1 to 5. A shopping basket table 1, an accounting unit 2, and a collection base 3 are formed as separate block bodies 4, 5 and 6, respectively. The body 4 of the shopping basket table 1 and the body 6 of the collecting base 3 have trapezoidal shapes tapering forward (toward the customer) when seen from the top, and front faces 7 and 8 are inclined downward with bottoms of the front faces being recessed backward. A front face 9 of the accounting unit 2 is also inclined downward, and a bottom of the front face 9 is recessed backward. The shopping basket table 1, the accounting unit 2 and the collecting base 3 are

arranged laterally in such a manner that adjacent side faces approximately contact each other. Thus, the front faces 7, 8 and 9 of the shopping basket table 1, the accounting unit 2 and the collecting base 3 are arranged along a circular arc.

[0008] The shopping basket table 1 comprises a weighing scale 10 as a pre-weighing scale on the body 4. The weighing scale 10 has a loading surface 10a as a pre-loading surface, and a shopping basket 11, in which a customer puts articles he/she wants to buy, is placed on the loading surface 10a. The total weight of the shopping basket 11 is weighed.

[0009] Further, the accounting unit 2 comprises a settlement function part 12 on the body 5. A coin change machine 13 and a bill change machine 14 are provided below the settlement function part 12. A table 15 is provided above the coin change machine 13 and the bill change machine 14. Further, a scanner 16, a password input machine 17 and a receipt printer 18 are provided above the table 15. Still above them, a touch panel 19 and a card reader 20 are provided. At a central back part of the body 5, a lamp 21 is provided. The scanner 16 as a scanner block 22 is covered with a cover and is separable from the body 5.

[0010] Further, the collecting base 3 comprises a weighing scale 23 on the body 6, which is a different weighing scale from the weighing scale 10 as the pre-weighing scale. The weighing scale 23 has a loading surface 23a. At a back part of the weighing scale 23, an article placing table 25 is provided via a supporting column 24 standing upward. At a front part of the article placing table 25, a pair of plastic bag hangers 27 for holding an opening of a plastic bag 26 for receiving articles protrude from the article placing table 25. At a center part of the pair of plastic bag hangers 27, a plastic bag holder 28 for holding layered unused plastic bags 26 is provided.

[0011] According to the structure explained above, as shown in Fig. 2, the shopping basket table 1, the accounting unit 2 and the collecting base 3 are arranged in this order from left to right, and they are located in such a manner that adjacent side faces of the bodies approximately contact each other. Since the shopping basket table 1 and the collecting base 2 have trapezoidal shapes tapering forward when seen from the top, the front faces 7, 8 and 9 are arranged in a circular arc, that is, in a fan-like fashion. The shopping basket table 1, the accounting unit 2 and the collecting base 3 are connected with power supply and signal lines through electric wires (not shown). Further, if radio communication is equipped, which does not require hard-wiring, any arrangement of these bodies is possible for effective communication.

[0012] A customer places the shopping basket 11, in which an article he/she wants to purchase is contained, on the loading surface 10a of the weighing scale 10. Then, a total weight is transmitted as data to the settlement function part 12, and the customer scans each article by the scanner 16 according to an instruction shown on the touch panel 19, and puts a scanned article into the plastic bag 26 which is hung on the plastic bag hangers 27 at the collecting base 3. The plastic bags 26 are layered and stocked at the plastic bag holder 28, and the customer picks up one of the plastic bags 26 and hangs it open on the plastic bag hangers 27. After all the articles are scanned and put in the plastic bag 26, the customer executes an accounting process on the touch panel 19.

[0013] In this accounting process, a payment method as to either by cash or by card is selected. If cash payment is selected, money is paid into the coin change machine 13 or the bill change machine 14, whereas if card payment is selected, a card is swiped through the card reader 20. On completion of the accounting process, a receipt is issued from the receipt printer 18. When there is change, change is given from the coin change machine 13 or the bill change machine 14, and then checkout is completed. During this process, the total weight including the shopping basket 11 has been weighed by the weighing scale 10 of the shopping basket table 1, and a total weight of the scanned articles is weighed by the weighing scale 23 of the collecting base 3. By comparing the weight which is obtained by subtracting a weight of the shopping basket 11 from the weight data obtained by the weighing scale 10, and the weight obtained by the weighing scale 23, whether or not all the registered articles have been transferred to the plastic bag 26 can be confirmed. Thereby, dishonest acts can be prevented. Here, the accounting unit 2 includes a controller (POS), power supply, and so on to execute control of each machine.

[0014] Some kinds of articles can be easily damaged by deformation, and by other reasons. Thus, they may need to be kept out of the plastic bag 26 until other articles are finished being scanned. In this case, such articles can be placed on the article placing table 25 temporarily, and then can be put in the plastic bag 26 later.

[0015] As described above, by arranging the shopping basket table 1, the accounting unit 2 and the collecting base 3 in a fan-like fashion, a movement of scanning an article which is taken from the shopping basket 11 on the shopping basket table 1 and is put in the plastic bag 26 on the collecting base 3 can be performed with a circular movement in such a way that the customer, who stands in front of the accounting unit 2, turns around. Therefore, the customer can perform a self-checkout process standing at a certain single position. This improves workability.

[0016] Further, as shown in Fig. 3, since the front faces 7, 8 and 9 of the shopping basket table 1, the accounting unit 2 and the collecting base 3 are inclined downward with bottoms of the front faces being recessed backward, even a customer with a wheelchair can closely approach the shopping basket table 1, the accounting unit 2 and the collecting base 3, and thereby operability can be improved. This, to be sure, goes for a standing customer, whose toes can be accommodated in the spaces made under the inclined front faces so that he/she can closely approach the shopping basket table 1, the accounting unit 2 and the collecting base 3. This improves workability. Further, as shown in Fig. 1 with a dashed line, the scanner block 22 can be detached from the accounting unit 2 and can be placed on the article placing table 25. Thereby, scanning of the articles can be performed on the collecting base 3, and therefore the customer's

moving distance becomes shortened and operability can be improved.

[0017] Fig. 4 is a perspective view showing another arrangement of the shopping basket table 1, the accounting unit 2 and the collecting base 3. Reference numerals used in Figs. 1 to 3 will be used to designate the same elements in Fig. 4 (and Fig. 5), and the overlapping explanations will be omitted. In this arrangement, the accounting unit 2 is placed laterally on the right side of the shopping basket table 1, and the collecting base 3 is placed at a right angle position which faces a customer. Since the shopping basket table 1 and the collecting unit 2 are arranged in line and the collecting base 3 faces the customer at a right angle with respect to the other two units, the units as a whole are in L-shaped arrangement. With this arrangement, the moving distance from the shopping basket 11 to the plastic bag 26 is shortened and operability can be improved.

[0018] Fig. 5 is a perspective view showing another arrangement of the shopping basket table 1, the accounting unit 2 and the collecting base 3. In this arrangement, the shopping basket table 1, the collecting base 3 and the accounting unit 2 are arranged in this order from left to right, and the scanning block 22 is detached from the accounting unit 2 and set on the article placing table 25 of the collecting base 3. With this arrangement, a reading motion of an article can be performed only by an action of transferring the article a short distance between the shopping basket table 1 and the collecting base 3, thereby a burden to a customer can be reduced. With this short distance to transfer the article, the customer scans all the articles to input all the article data, and then executes an accounting process and completes self-checkout in front of the accounting unit 2.

[0019] In the present invention as described above, a lay-out of the shopping basket table 1, the accounting unit 2 and the collecting base 3 is freely changeable. Therefore, even if a certain lay-out is first adopted when the system is installed, another lay-out that is satisfactory to customers can be adopted.

[0020] It is explicitly stated that all features disclosed in the description and/or the claims are intended to be disclosed separately and independently from each other for the purpose of original disclosure as well as for the purpose of restricting the claimed invention independent of the composition of the features in the embodiments and/or the claims. It is explicitly stated that all value ranges or indications of groups of entities disclose every possible intermediate value or intermediate entity for the purpose of original disclosure as well as for the purpose of restricting the claimed invention, in particular as limits of value ranges.

[0021] It is explicitly stated that all features disclosed in the description and/or the claims are intended to be disclosed separately and independently from each other for the purpose of original disclosure as well as for the purpose of restricting the claimed invention independent of the compositions of the features in the embodiments and/or the claims. It is explicitly stated that all value ranges or indications of groups of entities disclose every possible intermediate value or intermediate entity for the purpose of original disclosure as well as for the purpose of restricting the claimed invention, in particular as limits of value ranges.

Claims

1. A self-checkout system, comprising:

an accounting unit (2) which includes a scanner (16) to scan at least one article to read data of the article, and which executes a transmission based on the read data of the article; and
a collecting base (3) which includes a loading surface (23a) for supporting each scanned article and a weighing scale (23) for weighing the article supported by the loading surface;
characterized in that the accounting unit and the collecting base are formed as physically separate units such that an arranging order and an arranging direction of the accounting unit and the collecting base are changeable.

2. The self-checkout system according to claim 1, further comprising a shopping basket table (1) which comprises a pre-loading surface (10a) for supporting an article that has not yet been scanned.

3. The self-checkout system according to claim 2, wherein the shopping basket table is formed as a separate unit from the accounting unit and the collecting base.

4. The self-checkout system according to claim 2, wherein the shopping basket table comprises a pre-weighing scale (10) for weighing the article supported by the pre-loading surface.

5. The self-checkout system according to claim 3, wherein the shopping basket table comprises a pre-weighing scale (10) for weighing the article supported by the pre-loading surface.

6. The self-checkout system according to claim 1, wherein the scanner is detachable from the accounting unit, to be

positioned on the collecting base.

7. The self-checkout system according to claims 1 or 6, wherein front faces of bodies of the accounting unit and the collecting base are inclined downward such that bottoms of the front faces are recessed backward.

8. The self-checkout system according to any of claims 2 to 5, wherein front faces of bodies of the accounting unit, the collecting base and the shopping basket table are inclined downward such that bottoms of the front faces are recessed backward..

9. The self-checkout system according to claims 3 or 8, wherein the accounting unit, the collecting base and the shopping basket table are arranged in a fan-like fashion.

Fig. 1

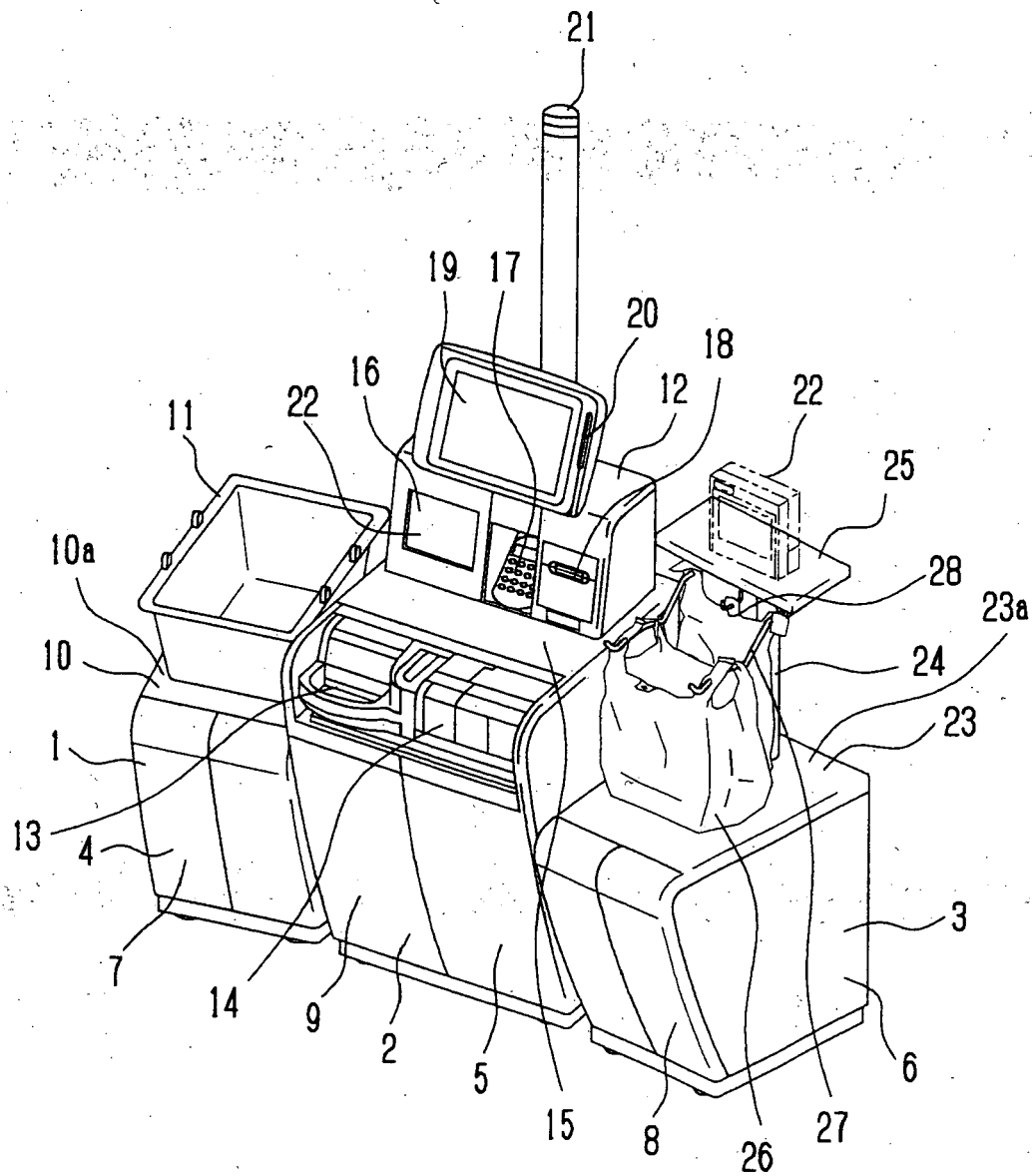


Fig. 2

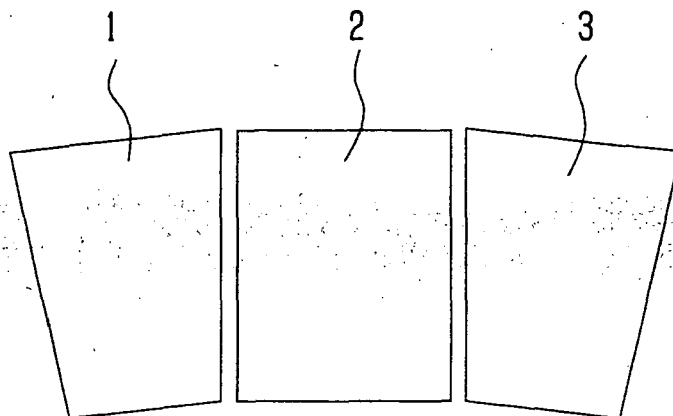


Fig. 3

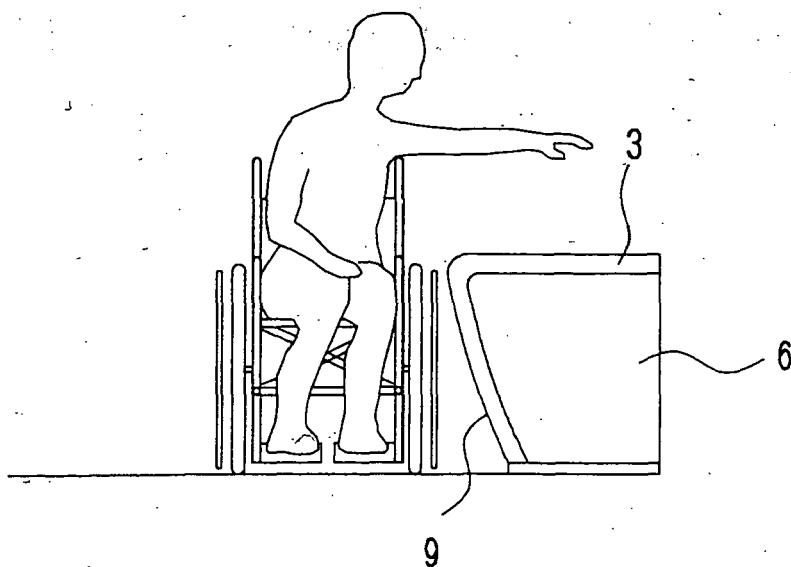


Fig. 4

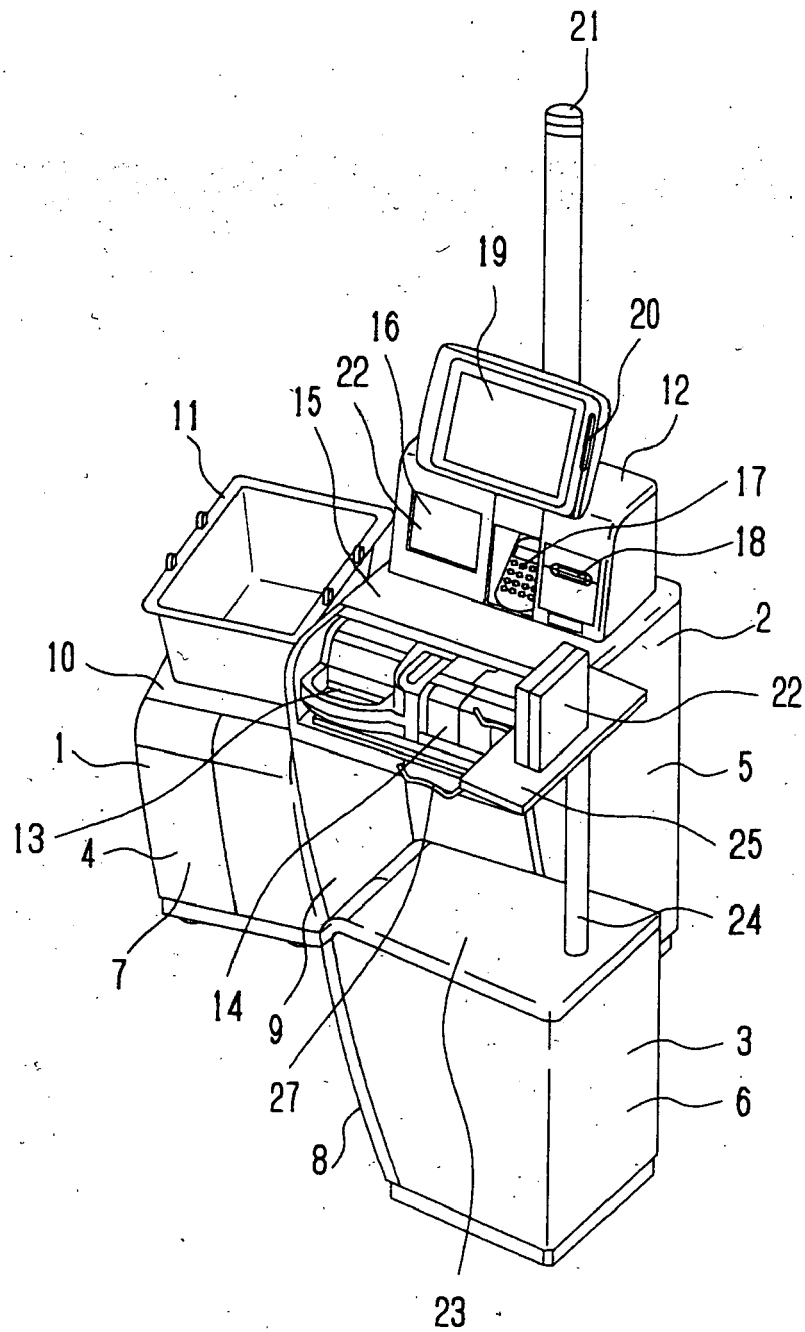
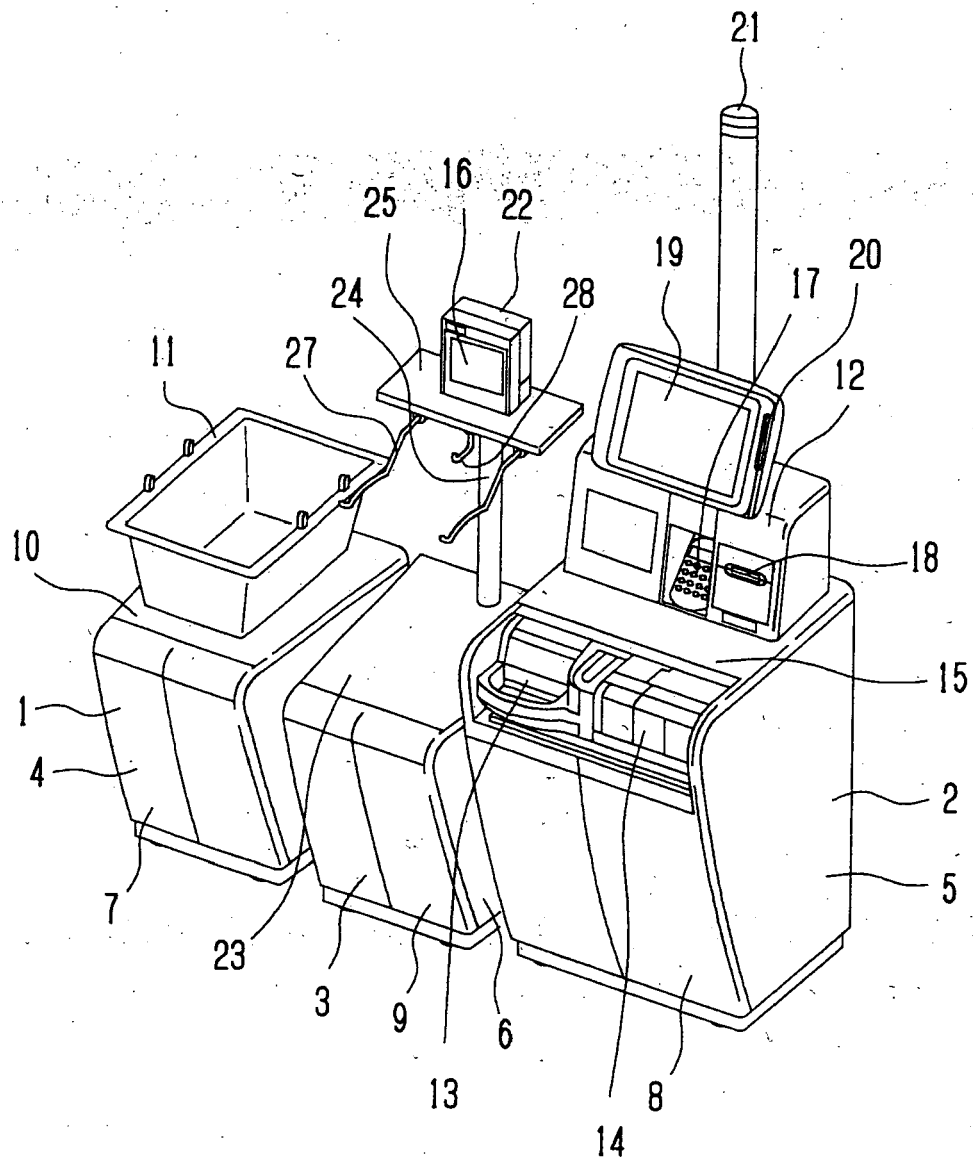


Fig. 5





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 00 1867

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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 29 March 2006	Examiner Breugelmans, J
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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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
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29-03-2006

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