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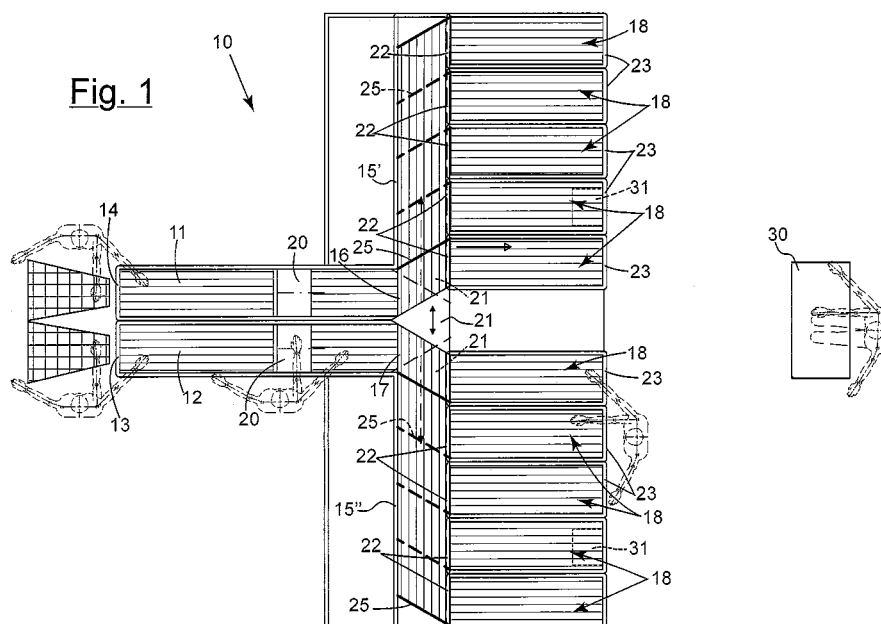
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(54) **Automatic cash register**

(57) Automatic cash register group (10) comprising a goods deposit area, an area for identifying the goods being fed and an area for depositing the identified goods provided in which are at least two longitudinal belts (11, 12) for feeding the goods placed adjacent to each other, the longitudinal feeding belts comprising first ends (13, 14) for depositing the goods and second ends (16, 17) respectively associated to at least two transversal feeding belts (15', 15''), the transversal feeding belts (15', 15'') developing from sides opposite and substantially orthogonal to the longitudinal feeding belts (11, 12), the automatic cash register group (10) comprising a plurality of

deposit belts (18) provided with respective first ends (22) associated to the transversal feeding belts (15', 15'') and second ends (23) for collecting the goods, the deposit belts (18) developing adjacent to each other substantially orthogonal to the transversal feeding belts (15', 15''), the group (10) further comprising means (20) for identifying the goods being fed associated to the longitudinal feeding belts (11, 12), movable means (21) for directing the goods being fed onto the transversal feeding belts (15', 15'') at the second ends (16, 17) of the at least two longitudinal feeding belts (11, 12) and movable means (25) for channelling the goods being fed into the deposit belts (18) associated to the first ends (22) of the deposit belts (18).



Description

[0001] The present invention refers to an improved automatic cash register group.

[0002] In particular, the present invention refers to an automatic cash register group applicable in a supermarket wherein usually there is simultaneously a large number of customers and each customer simultaneously purchases several items.

[0003] Usually, as known, the customer arrives at the cash register carrying the chosen items in a shopping bag or trolley where the abovementioned items had been progressively accumulated.

[0004] Usually, at the cash register, with personnel such as a cashier, the price of each single item is entered into a terminal, called cash register, either through direct manual entry on the numerical keyboard or - given that nowadays items are provided with a barcode - through a barcode reader connected to the cash register.

[0005] It is thus commonly required that the cashier examines each item to read the price thereof or possibly pass it through the field of vision of the barcode reader.

[0006] Such common cash registers reveal the clear drawback of necessarily requiring the presence of service personnel, the cashiers, with the ensuing costs of personnel which represent the substantial part of the utilization costs.

[0007] Furthermore, considering the space required for the service personnel in question, it is not possible to arrange these cash register systems adjacent to each other exceeding a given number. Given that the customers always have the need to pay for their purchased items in least time possible, in order to reduce the waiting time a large number of cash registers are required implying, for the reasons outlined above, large spaces, not always available, as well as employing many cashiers.

[0008] Thus, in common cash registers, it is the cashier who performs the operations related to identifying the items. In such cases the customer usually places the items to be bought on a input conveyor in such a manner that the cashier in question processes the items. Subsequently, the cashier positions the goods "downstream" to allow the customer to pick the items and put them into the bags provided.

[0009] Usually, in such cash registers, when the cashier is ready to enter the items, even the customer is ready to put them away and pay the due amount within a short period of time.

[0010] Thus, in the system of cash registers "supervised" by cashiers, identification of the items is almost always carried out simultaneously with the action of putting away the items and the identified items are almost constantly under supervision.

[0011] However, disadvantageously, these cash register systems are restricted by the fact that the identification of the items of the subsequent customer remains blocked until the preceding customer is through with payment operations. To overcome such drawbacks currently

available in the market are cash registers made in such a manner to allow the user to independently perform the steps of paying and recording the goods to be purchased even in the absence of the personnel.

[0012] Such "automatic" cash register systems are mainly required to carry out three operations such as identifying the goods that the user wants to purchase, collect and put the same items away in a given space, for example in a bag or in a box or any other similar container, and finally allow paying.

[0013] Generally, in these systems each single item is delivered manually by the customer to a scanner, be it a manual or fixed scanner, connected to a cash register.

[0014] Furthermore in such systems, given the absence of cashiers, the operation of putting away and paying the items must necessarily be performed after the reading of the items, which must then be positioned into dedicated places for the whole operation to be effective.

[0015] In some systems, after being scanned the item is still in the hands of the customer who directly puts away the scanned item downstream of the reading station.

[0016] This system has the double disadvantage of inefficiently using the scanning device. As a matter of fact, there are pauses wherein the customer is required to move the scanned goods occupying the system of the cash register for a relatively long period of time. In order to overcome such drawbacks there are systems provided with a conveyor belt, or the like, on which the items are moved from this identification station to a collection area.

[0017] Thus, initially the customer may place the items on the conveyor belt without simultaneously having to put them away again and package them.

[0018] In addition, some embodiments comprise automatic stations for identifying the goods wherein, after being placed on the conveyor belt, the item automatically enters into an identification station and, almost immediately thereafter, it is automatically transferred to a collection area.

[0019] This allows the customer to pay almost immediately after placing the last item on the conveyor belt and, after paying, moving on to the collection area to recover the paid items.

[0020] However, such automatic cash registers reveal other problems deriving from the fact that the cash register is available for the subsequent customer only after the previous customer has paid and put away his items.

[0021] As a matter of fact, while the customer performs the paying operations and puts away the items, it is not possible to move any new items to the occupied collection area.

[0022] In order to overcome such drawback currently available are cash registers wherein developing from a goods identification device are a plurality of belts for depositing the goods being purchased in such a manner to immediately clear the identification station for the subsequent customer, even if the preceding customer has not yet picked up the purchased goods.

[0023] In such manner, these groups of cash registers

have two or more collection areas so that the subsequent customer directly places the items on the conveyor, even though the previous customer has not yet paid the purchased goods, to the advantage of the efficiency of the system.

[0024] In such case, each area for collecting the goods may be closed physically by a gate mechanism or by a similar system that is released after payment. Alternatively, it is possible to protect the collection area with sensors capable of detecting unauthorized nearing.

[0025] A payment station may be installed at the collection area. As a matter of fact, provided for may be a centralised payment station serving several cash register systems in which a receipt is issued bearing an issuance code, for example provided with a barcode, the receipt then being used in the collection area to release the closure of the same.

[0026] However, though such known systems are very efficient, they reveal some drawbacks.

[0027] As a matter of fact, in case of failure or damaging of the products identification station and/or the associated belt for supplying the products themselves, it occurs that all the collection areas connected to the respective damaged cash register are out of order. This derives from the fact that a given group of collection areas is currently connected only to a given products identification device and it is not capable of receiving goods coming another identification device. An object of the present invention is that of providing an improved automatic cash register group capable of overcoming the abovementioned drawbacks of the prior art in an extremely simple, inexpensive and particularly functional manner.

[0028] Another object is that of providing an improved automatic cash register group comprising a goods deposit area, area of identification of said goods being fed and a plurality of deposit areas of said identified goods wherein all the collection areas may be used even in case of failure of one or more products identification devices.

[0029] These objects according to the present invention are attained by providing an improved automatic cash register group as outlined in claim 1.

[0030] Further characteristics of the invention are highlighted by the subsequent claims.

[0031] Characteristics and advantages of an improved automatic cash register group according to the present invention shall be clearer from the following exemplifying and non-limiting description with reference to the attached schematic drawings wherein:

Figure 1 is a top schematic view of an embodiment of an improved automatic cash register group according to the present invention;
Figure 2 is a perspective view of the improved automatic cash register group of figure 1; and
Figure 3 is a top schematic view of the improved automatic cash register group of figure 1 in different steps of use.

[0032] Referring to the figures, an improved automatic cash register group according to the present invention is indicated with 10.

[0033] In particular, just like all automatic cash registers of the prior art currently available in the market, the automatic cash register group 10 of the present invention comprises a goods deposit area, wherein customers may place - on feeding belts - all the goods making up one's shopping, an area for identifying the goods being fed wherein - through codes associated to the products - the total expense of the customer's shopping is calculated, and areas for depositing the identified goods wherein the products remain awaiting to be picked until the customer pays the amount calculated by the preceding means for identifying the products.

[0034] As observable in figures 1-3, according to the invention the automatic cash register group 10 of the present invention comprises at least two longitudinal belts 11, 12 for feeding the goods placed thereon by the customer after picking them up from the respective trolley or basket. In particular such at least two longitudinal feeding belts 11, 12 are arranged adjacent to each other, or lightly separated from each other, and comprise first ends 13, 14 for depositing the goods and second ends 16, 17 respectively associated to at least two transversal belts 15', 15'' for feeding the goods.

[0035] Such transversal feeding belts 15', 15'' develop from sides opposite and substantially orthogonal with respect to the longitudinal feeding belts 11, 12 thus forming substantially L-shaped structures with the latter.

[0036] Furthermore, the automatic cash register group 10 comprises a plurality of deposit belts 18 which are provided with respective first ends 22 associated to different portions of the development of the transversal feeding belts 15', 15'' and second ends 23 for collecting the goods.

[0037] Such deposit belts 18 develop in two adjacent groups substantially orthogonal with respect to the transversal feeding belts 15', 15'' thus obtaining a comb-like structure with the latter.

[0038] Obviously, the automatic cash register group 10 comprises means 20 for identifying the goods being fed, preferably associated to a portion of the development of the longitudinal feeding belts 11, 12.

[0039] According to an embodiment the means 20 for identifying the goods being fed, associated to the longitudinal feeding belts 11, 12 may comprise devices for reading a code associated to the goods themselves such as for example a scanner for reading a barcode associated to the products.

[0040] Preferably, such scanner for reading barcodes is connected to a software for processing data associated to the abovementioned barcode such as the price of the product itself.

[0041] Preferably, such devices for reading the code associated to the goods may be of the automatic type. In alternative or more complex embodiments, the means 20 for identifying the goods may comprise shoplifting pre-

vention devices which operate associated to the belts with weighing means for verifying the weight, or to magnetic sensors or to radio frequency receivers for verifying the respective labels.

[0042] According to the invention the automatic cash register group 10 comprises at least one payment receipt issuing device 30, provided with a code, wherein such device 30 for issuing the receipt is connected in a known manner and/or through wireless system, to the means 20 for identifying the goods.

[0043] Thus, in particular, after placing the goods on one of the two feeding belts 11, 12 the customer will proceed to the abovementioned receipt issuing device 30 and, after paying the shopping, collect the same receipt indicating that payment has been completed.

[0044] Such payment may be performed automatically.

[0045] After paying and collecting the receipt indicating successful payment, on which as mentioned above a code is born, the customer shall move on to the second end 23 of the deposit belt 18 into which his goods are accumulated and pick them.

[0046] According to an embodiment, the second end 23 of the belts 18 for depositing the goods may comprise a group 31 for collecting the identified and transported goods, such collection group 31 being selectively not accessible from outside.

[0047] Such group 31 for collecting the goods may comprise devices for reading the code associated to the payment receipt in such a manner to make the goods accessible solely after the same have been paid, after entering or writing said code.

[0048] Furthermore according to the invention, the automatic cash register group 10 comprises movable means 21 for directing the goods being fed coming from at least two longitudinal feeding belts 11, 12 onto the transversal feeding belts 15', 15''.

[0049] In particular such movable directing means 21 are located at the second ends 16, 17 of the at least two longitudinal feeding belts 11, 12.

[0050] In a preferred embodiment shown in the figures, the movable directing means comprise a movable wedge-shaped deflector 21, with vertex associated to the second ends 16, 17 of the at least two longitudinal feeding belts 11, 12. Such wedge-shaped element 21 according to the invention is movable astride the at least two transversal feeding belts 15', 15'' to identify a first position wherein it excludes for example one 15' of the two transversal feeding belts 15', 15'', a second position wherein it excludes the other 15'' of the two transversal feeding belts 15', 15'', and a third position wherein the goods fed on the first longitudinal feeding belt 11 are directed on the first transversal feeding belt 15' and the goods fed on the second longitudinal feeding belt 12 are directed onto the second transversal feeding belt 15''.

[0051] In such manner, at the first and second position of the wedge 21 all the deposit belts 18 of one group and the other group are put into communication with both the

longitudinal feeding belts 11, 12.

[0052] Advantageously even in case of failure of one longitudinal feeding belt 11, 12 all the deposit belts 18 are accessible and thus useable without slowing down the process of paying the goods making up the customer's shopping.

[0053] Thus, regarding the information outlined above, the transversal feeding belts 15' 15'' are always operative even in case of failure of a longitudinal feeding belt 11, 12.

[0054] In order to channel the goods of a respective shopping into the respective deposit belt 18, the automatic cash register group 10 according to the invention also comprises movable means 25 for channelling the goods being fed on the deposit belts 18, such means 25 being associated to the first ends 22 of the deposit belts 18.

[0055] According to the shown embodiment such movable channelling means 25 comprise barrier elements 25 moveable between a first closure position, where they isolate the deposit belts 18 not hindering the feeding of the goods onto the transversal feeding belts 15', 15'', and an interception position, where they are extended in oblique direction along transversal feeding belts 15', 15'' intercepting the goods being fed and channelling them into a respective deposit belt 18. Preferably, in order to make the cash register group 10 of the present invention entirely automatic it may also be provided for that both the movable means 21 for directing the goods being fed on the transversal feeding belts 15', 15'' at the second ends 16, 17 of the at least two longitudinal feeding belts 11, 12, and the movable means 25 for channelling the goods being fed into the deposit belts 18 associated to the first ends 22 of the deposit belts 18 may be of the automatic type.

[0056] It is easy to understand how the improved automatic cash register group subject of the present invention operates.

[0057] The improved automatic cash register group according to the present invention comprises at least two goods deposit areas, wherein the customer places - on a feeding belt - all the goods representing his/her shopping, at least two areas for identifying the goods being fed where - through codes of the products - the total expense of the customer's shopping is calculated, and a plurality of areas for depositing the identified goods where the products remain awaiting to be collected until the customer pays the expense calculated by the preceding means for identifying products.

[0058] In particular, the group 10 comprises more than one belt 11, 12 for feeding the goods, such belts being selectively connectable to all deposit belts 18 present.

[0059] As a matter of fact, preferably the group 10 comprises movable directing means 21, such as a wedge-shaped movable deflector with vertex associated to the second ends 16, 17 of the at least two longitudinal feeding belts 11, 12.

[0060] Such wedge-shaped element 21 astride the at least two transversal feeding belts 15', 15'' identifies a

first position in which it connects both the two longitudinal feeding belts 11, 12 to one of the two transversal feeding belts 15', 15'', a second position in which it connects both the two longitudinal feeding belts 11, 12 to the other of the two transversal feeding belts 15', 15'', and a third position in which the goods fed on the first longitudinal feeding belt 11 are directed onto the first transversal feeding belt 15' and the goods fed on the second longitudinal feeding belt 12 are directed onto the second transversal feeding belt 15''.

[0061] In such manner, through the first and the second position of the wedge 21, all the deposit belts 18 of one group and of the other group are put into communication with both the two longitudinal feeding belts 11, 12.

[0062] Thus, advantageously, in case of failure of one of the longitudinal feeding belts 11, 12 all the deposit belts 18 may be used by the remaining longitudinal feeding belt 11, 12 without slowing down the process of paying the goods making up the customer's shopping.

[0063] Figure 3 shows the cash register group during a normal step of operation wherein the first belt 11 - through the deflector 21 arranged centrally - directs the products placed thereon to the transversal belt 15' and then - through the barrier element 25 - to the second of the deposit belts 18 of a first group. The second belt 12 - through the deflector 21 arranged centrally - instead directs the products placed thereon to the transversal belt 15'' and then - through the barrier element 25 - to the last of the deposit belts 18 of a second group. The dashed positions of the deflector 21 show how the same is arranged to receive products from both belts 11, 12 and selectively feed them to the first and second group of belts 18.

[0064] It has thus been shown that an improved automatic cash register group according to the present invention attains the objects outlined above.

[0065] As a matter of fact, the improved automatic cash register group of the present invention allows using all the deposit belts, even in case of failure of one or more products identification devices.

[0066] The improved automatic cash register group of the present invention thus conceived is susceptible to various modifications and variants, all falling within the same inventive concept; furthermore, all details may be replaced by technically equivalent elements. In practice, the materials used, as well as the dimensions thereof, may vary according to the technical requirements.

Claims

1. Automatic cash register group (10) comprising a goods deposit area, an area of identification of said goods being fed and a plurality of deposit areas of said identified goods, **characterised in that** it comprises at least two longitudinal goods feeding belts (11, 12), said at least two longitudinal feeding belts comprising first ends (13, 14) for the deposit of said

goods and second ends (16, 17) associated respectively with at least two transversal feeding belts (15', 15''), said transversal feeding belts (15', 15'') developing from opposite sides in relation to said longitudinal feeding belts (11, 12), said automatic cash register group (10) comprising a plurality of deposit belts (18) provided with respective first ends (22) associated with said transversal feeding belts (15', 15'') and second ends (23) for the removal of said goods, said deposit belts (18) developing side by side from said transversal feeding belts (15', 15''), said group (10) further comprising identification means (20) of said goods being fed associated with said longitudinal feeding belts (11, 12), mobile directing means (21) of said goods being fed towards said transversal feeding belts (15', 15'') at said second ends (16, 17) of said at least two longitudinal feeding belts (11, 12) and mobile channelling means (25) of said goods being fed toward said deposit belts (18) selectively associated with said first ends (22) of said deposit belts (18).

2. Automatic cash register group (10) according to claim 1 **characterised in that** said identification means (20) of said goods being fed associated with said longitudinal feeding belts (11, 12) comprise devices for the reading of a code associated with said goods.

3. Automatic cash register group (10) according to claim 2 **characterised in that** said devices for the reading of a code associated with said goods comprise a bar code reading scanner connected to software for the processing of data associated with said bar code.

4. Automatic cash register group (10) according to claim 3 **characterised in that** said devices for the reading of a code associated with said goods are automatic.

5. Automatic cash register group (10) according to claim 1 **characterised in that** it comprises at least one code-bearing payment receipt issue device (30), said receipt issue device (30) being connected to said identification means (20) of said goods.

6. Automatic cash register group (10) according to claim 5 **characterised in that** said second ends (23) for the removal of said goods of said deposit belts (18) comprise a group for the collection (31) of said goods selectively non-accessible from outside, said group for the collection (31) of said goods comprising devices for the reading of said code associated with said payment receipt.

7. Automatic cash register group (10) according to claim 1 **characterised in that** said mobile directing

means (21) of said goods being fed on said transversal feeding belts (15', 15'') at said second ends (16, 17) of said at least two longitudinal feeding belts (11, 12) comprise a mobile, wedge-shaped deflector (21) with vertex associated with second ends (16, 17) of said at least two longitudinal feeding belts (11, 12). 5

8. Automatic cash register group (10) according to claim 7 **characterised in that** said wedge is mobile to identify a first position wherein it excludes one of said at least two transversal feeding belts (15', 15''), a second position wherein it excludes the other one of said at least two transversal feeding belts (15', 15''), and a third position wherein said goods fed on different longitudinal feeding belts (11, 12) are directed to different transversal feeding belts (15', 15''). 10 15

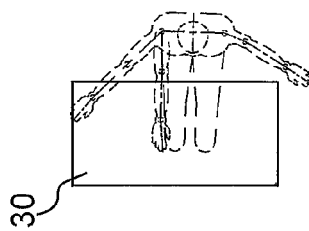
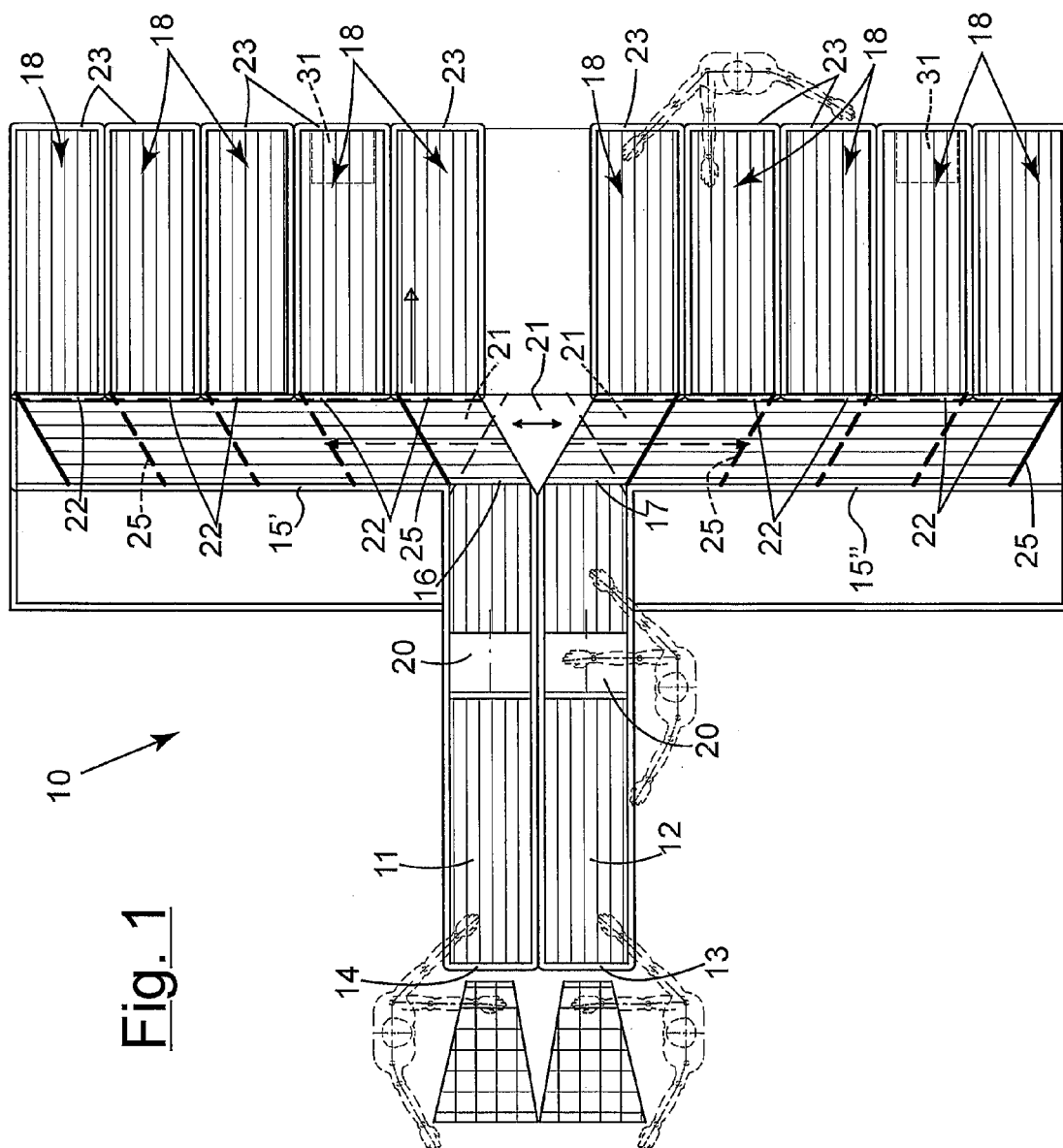
9. Automatic cash register group (10) according to claim 1 **characterised in that** said mobile channelling means (25) of said goods being fed towards said deposit belts (18) associated with said first ends (22) of said deposit belts (18) comprise mobile barrier elements (25). 20 25

10. Automatic cash register group (10) according to claim 9 **characterised in that** said barrier elements (25) are independently mobile between a first closing position wherein they isolate said deposit belts (18) and do not intercept said goods being fed on said transversal feeding belts (15', 15''), and an interception position wherein they intercept said goods being fed on said transversal feeding belts (15', 15'') and they channel them in said deposit belts (18). 30 35

11. Automatic cash register group (10) according to claim 1 **characterised in that** said mobile directing means (21) of said goods being fed on said transversal feeding belts (15', 15'') at said second ends (16, 17) of said at least two longitudinal feeding belts (11, 12) and said mobile channelling means (25) of said goods being fed in said deposit belts (18) associated with said first ends (22) of said deposit belts (18) are automatic. 40 45

12. Automatic cash register group (10) according to claim 1 **characterised in that** said goods identification means (20) comprise anti-shoplifting systems which operate together with belts provided with scales for weight verification, or with magnetic sensors or with radiofrequency receivers for the verification of corresponding tags. 50 55

Fig. 1



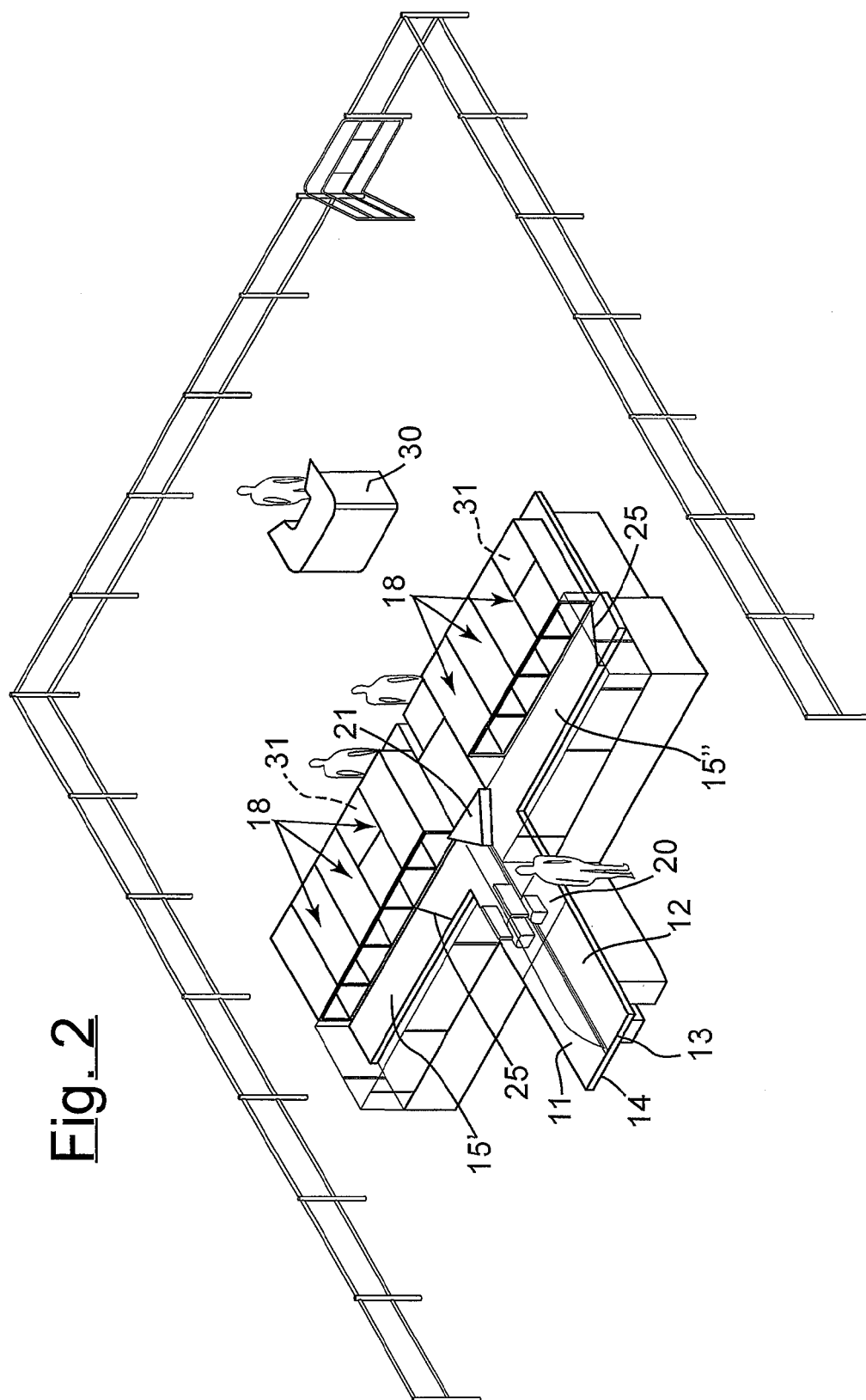
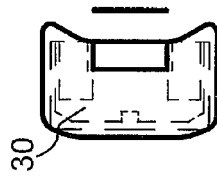
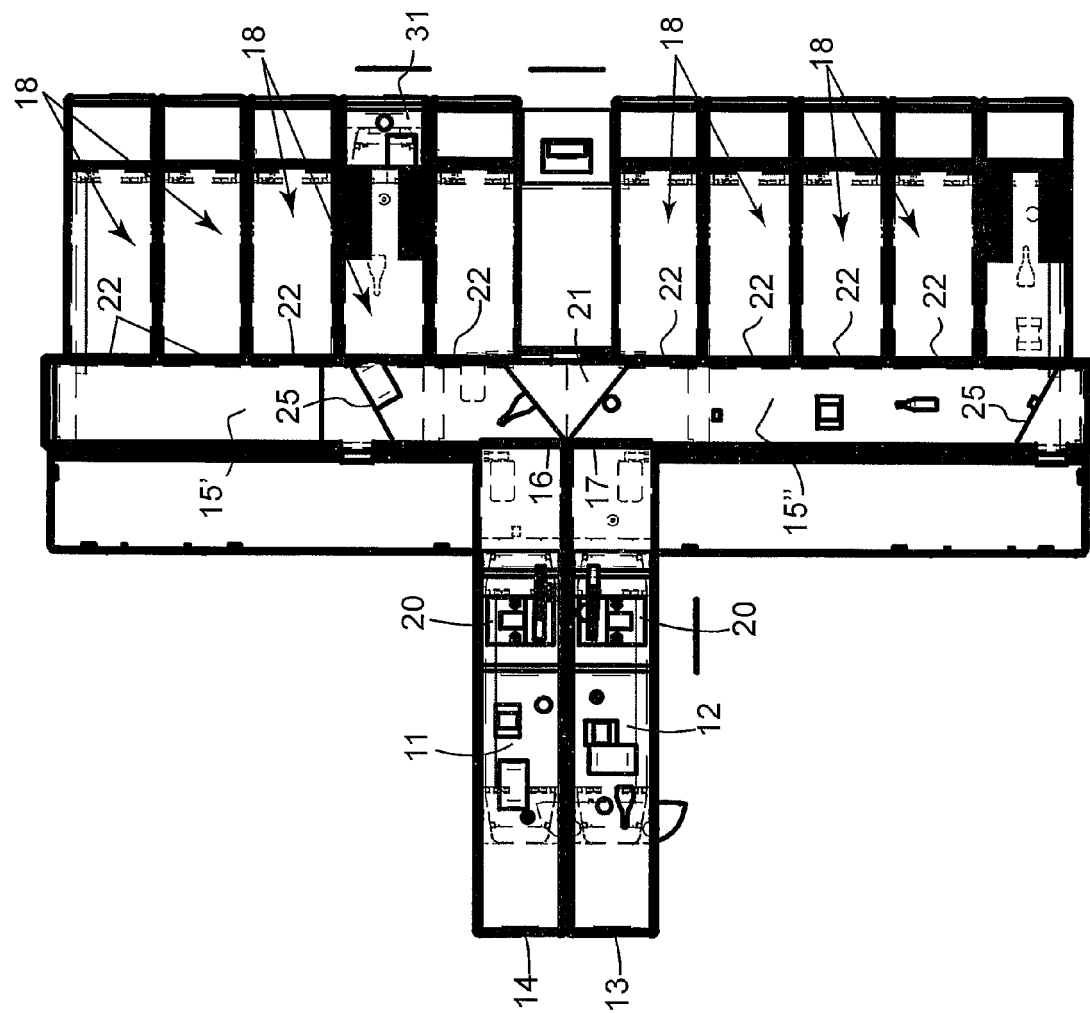


Fig. 2

Fig. 3





EUROPEAN SEARCH REPORT

Application Number
EP 09 17 3263

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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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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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