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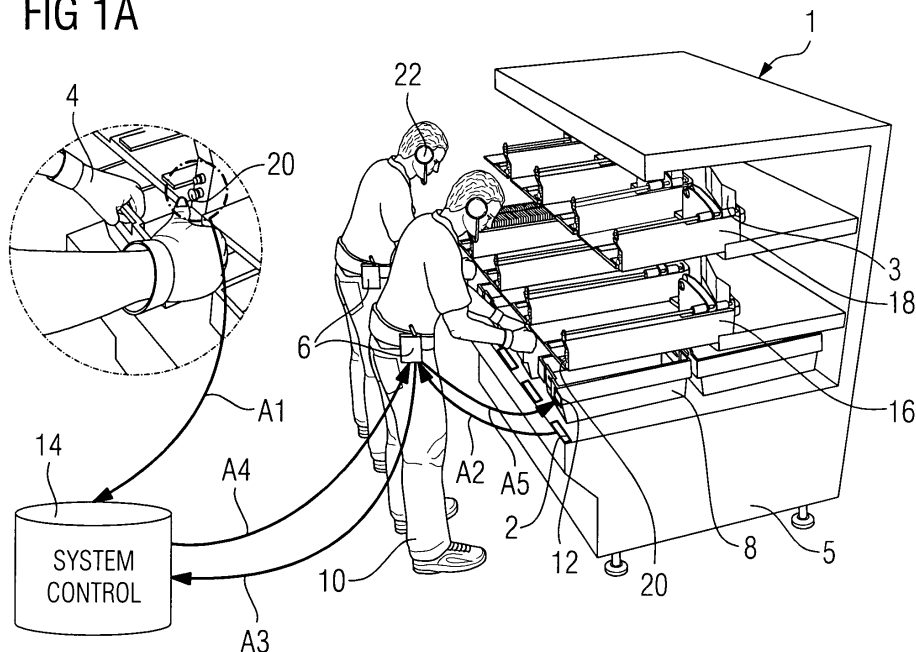
System and method for handling items provided with electronic identification devices

(57)

To handle an object (8) in a processing system (1) having at least one output arranged in at least one column, wherein the object (8) is provided with a first electronic identification (ID) device (12), and wherein a second electronic ID device (2) is assigned to a column, a first signal indicates a need for a transfer of the object (8) by an operator (10) at a predetermined output, and a second signal indicates that the operator (10) grasps the

object (8) at the predetermined output. At least one of the second ID devices (2) is energized to emit a device identification. The device identification and an ID signal identifying the operator (10) grasping the object (8) at the predetermined output are detected. In response to the first and second signals, data from a control system (14) is transmitted via the identified operator (10) to the first ID device (12) of the object (8) to store the data on the first ID device (12).

FIG 1A



Description

[0001] The various embodiments described herein generally relate to systems and methods for handling items. More particularly, the various embodiments relate to a system and method for handling items provided with electronic identification (ID) devices.

[0002] An exemplary handling system is a mail processing system, in which a mail sorting system uses optical character recognition or bar code reader systems to determine the destinations of the mail items, which are then used to map the mail items to assigned removable trays positioned at outlets of the sorting system. The mail sorting system typically runs for several hours with a throughput of, for example, over 40 thousand mail items per hour, which means that during an operational day all trays are likely to become full and need to be removed and replaced several times during the day. Each tray, when it is removed from the system is put into some type of temporary storage depending on whether it is to be routed intra-plant or to interplant destinations. For example, conveyors are used for intra-plant routing of trays, whereas roller containers are used for transport between locations by truck, train or airplane.

[0003] Several operators are normally assigned to remove and replace trays in a large (several-hundred outlet) sorting system. Signal lights adjacent to a given outlet or at the end of a sorting run signal to the operators that certain trays are full or nearly full. These trays are then systematically removed and replaced. This process of tray removal and replacement is called "sweeping".

[0004] Key in such a logistics process is that a tray does not lose its "identity" after it is removed from an outlet of the sort system since, on-average, most trays in large postal operations undergo several manual or automatic handling procedures. Since all trays are nominally identical the trays are labeled with their destination information in a clearly visible manner that is human readable and machine-readable. This labeling process maintains a strict one-to-one relationship from the point of tray removal from the sorting system until the tray or its content reaches its final destination.

[0005] For labeling purposes, the process begins when an operator approaches an outlet requiring sweeping and presses a button adjacent, or assigned to the outlet. This action signals to the control system of the sorting system that a tray is being removed from the outlet. With reference to a sort plan scheme, which the control system uses to assign physical outlets to certain sorting destinations, the sorting system now causes the destination information to be transferred to a label in human readable format.

[0006] The labeling process may be based on paper that is inserted into a holder on the tray, or on electronic devices. WO 2006/012997 (Deutsche Post AG) describes the labeling process and points out that, e.g., paper labels may be mixed up, or need to be replaced if the information changes. To improve the labeling proc-

ess, WO 2006/012997 suggests an electronic mail container label having an optically detectable electronic display for displaying information. The electronic label includes a display based on electronic paper or bistable liquid crystals, and a radio frequency identification (RFID) transponder. To transfer data to the electronic label, WO 2006/012997 discloses using an unspecified handheld device that transfers data in a contact-free manner to the electronic label while an operator holds the device within the reception range of the electronic label. As another contact-free manner of transferring data, WO 2006/012997 discloses using one or more gates that transfer data while the container passes.

[0007] The application of RFID technology in the area of mail processing is generally known, for example, from Postal Technology Magazine, March 2006, page 31. Further, to interact with RFID tags on objects, Mary Catherine O'Connor, Intel Demos RFID-Enabled Projects, RFID Journal, May 17, 2004, accessed on www.rfidjournal.com, describes a fingerless glove with an RFID reader mounted to the top of the hand. The reader includes an antenna/reader board, a transceiver and a rechargeable battery. Similarly, JP2002347937 discloses a glove having an antenna for reader/writer communication with an RFID tag, means for emitting a confirmation sound, and an ON/OFF switch for the reader/writer communication.

[0008] Using electronic labels and RFID technology simplifies the labeling and handling processes with respect to paper labels in that mix-ups and material are reduced. However, other problems arise that affect the complexity and cost of a sorting system, such as how to best tie the RFID technology in with the existing handling routines at the output of the sorting system, without burdening the operators with cumbersome equipment or additional manual steps.

[0009] There is therefore a need for an improved manner of labeling and handling items provided with electronic identification devices without unduly burdening the operators. The various embodiments described herein do not require the operators to change their handling routines or use cumbersome equipment. Yet, the embodiments described herein allow reliably identifying the particular operator that is currently performing a sweeping operation, and transferring information to the electronic ID device attached to an object while the operator is handling that object.

[0010] Accordingly, one aspect involves a method of handling an object in a processing system having at least one output arranged in at least one column, wherein the object is provided with a first electronic identification (ID) device (e.g., RFID label), and wherein a second electronic ID device is assigned to a column (e.g., RFID tag). A received first signal indicates a need for a transfer of the object at a predetermined output by an operator, and a received second signal indicates that the operator grasps the object at the predetermined output. The second ID device is energized to emit a signal containing a device

identification. The device identification and an ID information identifying the operator grasping the object at the predetermined output are determined. In response to the first and second signals, data from a control system is transmitted via the identified operator to the first ID device of the object to store the data on the first ID device.

[0011] Another aspect involves a system for handling objects in a processing system having at least one output arranged in at least one column, wherein each object is provided with a first electronic identification (ID) device, and wherein a second electronic ID device is assigned to a column. A signaling device of the system is provided at each output and upon activation by an operator generates a first signal indicative of a need for a transfer of the object by the operator at a predetermined output. A sensor unit of the system is worn at a hand of the operator and has at least one first pressure sensor and at least one stress sensor, wherein the sensor unit generates a second signal when pressure and stress are applied to the sensor unit signal indicative of the operator grasping the object at the predetermined output. An antenna unit of the system energizes the second ID device to emit a signal containing a device identification and to receive the signal containing the device identification, wherein the antenna unit is coupled to the sensor unit. A control system is coupled to the signaling device and the antenna unit to detect the first and second signals, the device identification and an ID information identifying the operator grasping the object at the predetermined output. Further, the control system transmits data via the identified operator to the first ID device of the object to store the data on the first ID device in response to the first and second signals.

[0012] The novel features and method steps characteristic of the invention are set out in the claims below. The invention itself, however, as well as other features and advantages thereof, are best understood by reference to the detailed description, which follows, when read in conjunction with the accompanying drawings, wherein:

[0013] Fig. 1A shows a schematic illustration of one embodiment of a system for handling objects provided with electronic ID devices;

[0014] Fig. 1B shows one embodiment of a tray having an electronic label; and

[0015] Figs. 2A-2C show one embodiment of a sensor unit.

[0016] Fig. 1A shows a schematic illustration of one embodiment of a system for handling objects 8 that are provided with electronic identification (ID) devices 12 for use with a wireless communications technology. The wireless communications technology is in one embodiment the RFID technology and the electronic ID devices 12 are RFID devices. Hereinafter, the electronic ID devices 12 are referred to as RFID devices 12. In one embodiment, the RFID devices 12 are configured as electronic labels, each having a transponder and an electronic display. Fig. 1B depicts a tray as one example of an object 8 having an RFID device 12 configured as an elec-

tronic label. In another embodiment, the RFID device 12 is a conventional RFID device (without a display) from which information can be read by polling the RFID device.

[0017] The system includes a sorting system 1 having a plurality of processing sites at the end of the sorting process. Each processing site is serviced by one of a plurality of operators 10 and includes one or more outputs. An output is defined as receiving all items 3 (e.g., mail items such as letters) that satisfy a predetermined criterion (e.g., post code or destination city) defined in a sort plan. A signaling device, e.g., a signal light, a sound generator, or a combination thereof, is assigned to each output and indicates to an operator 10 that the output is full, or nearly full. In addition, each output has a signaling device 20, e.g., a push-button, that the operator 10 is required to press when an output is full, or nearly full.

[0018] In the embodiment illustrated in Fig. 1A, the sorting system 1 includes a two-level sorter having an upper level 18 and a lower level 16, and several columns, also referred to as vertical tiers. Fig. 1A shows by way of example three vertical tiers separated by walls, and hence, six outputs, three outputs per level 16, 18, or row. According to the example described herein, one of these outputs may be assigned to the destination "Munich".

[0019] In another embodiment, the sorting system 1 includes a one-level sorter. The single level of that sorter has one or more outputs. Herein, the term "column" is used to refer to matrix-like row-column arrangement even if it includes only one row and one column, i.e., one output.

[0020] An RFID tag 2 is assigned to each tier (column). As the sorting system 1 of Fig. 1A has three tiers (columns), there are three RFID tags 2, each uniquely identifying (e.g., via a tier number) the respective tier when polled. As shown in Fig. 1A, several objects 8 rest on a support 5 arranged below the lower level 16. In that embodiment, the RFID tags 2 are mounted to the support 5 within line of sight of the operator 10, and without being disturbed by the support 5. However, it is contemplated that in another embodiments, the RFID tags 2 may be mounted at other locations, e.g., above the upper level 18, or at the front of the wall or bottom of the upper level 18, as long as the RFID tags 2 have a clear line of sight of the operator 10.

[0021] The RFID tags 2 are conventional electronic ID tags based on known RFID technology for which various applications are known. Each RFID tag 2 stores its unique "identity" that includes a tag ID number and/or at least information (e.g., via a tier number) about its location, i.e., to which tier it is assigned. In the illustrated embodiment, the objects 8 are trays to be loaded with mail items. In operation, an empty tray is positioned on the support 5 below each tier to receive the mail items of a "full" output.

[0022] The operators 10 stand in front of the sorting system 1 and face the tiers and the objects 8. Each operator 10 is equipped with a hand-mounted sensor unit 4, and an antenna unit 6. A control system 14 is coupled

to the sensor unit 4, the antenna unit 6 and the sorting system 1. The control system 14 may include a database, a processor unit and a transceiver unit, and may be located at a distance from the operator 10, as depicted in Fig. 1A. Alternatively, parts of the control system 14, e.g., the database, the processor unit and the transceiver unit, may be carried by the operator 10, e.g., in a housing carried around, for example, the waist, and may be coupled to the antenna unit 6. In yet another embodiment, the database, the processor unit and the transceiver unit may be part of the antenna unit 6. Each operator 10 may wear a headset 22 having a speaker (ear piece or headphone). Further details of sensor unit 4 are set forth below.

[0023] The object 8 may be a tray, a mail sack, or any other object that is subject to labeling following a sortation process, such as a luggage piece (e.g., a suitcase), wherein a strict one-to-one relationship is to be maintained between the point of removal from the sorting system and the object's final destination. In the present description, the object 8 is a tray (herein after referred to as tray 8) that is subject to operator handling. For illustrative purposes, Fig. 1A shows trays 8 arranged on the support 5 underneath the lower level 16, which are to be filled with mail items, removed by an operator 10 and loaded onto a conveyor or a transport container.

[0024] As to the operation of one embodiment of the system, at the beginning of a sweeping process, when an "outlet-full" signal indicates to an operator 10 to position himself to sweep that outlet, the operator 10 pushes the button 20 as shown in the enlarged section of Fig. 1A. As indicated by an arrow A1, pushing the button 20 generates a signal that indicates to the control system 14 that a sweeping operation needs to be performed, or is about to begin, at a given outlet to which the button 20 is assigned. In the illustrated embodiment, that outlet receives all mail items having as destination Munich. In response, the control system 14 modifies the sorting system's sort plan to redirect any mail item to another outlet, or to cease sorting to that destination because the outlet currently being swept is not available.

[0025] To perform the sweeping process, the operator 10 grasps with the hand provided with the sensor unit 4 the tray 8 by its handle. In one embodiment, the grasping activates the antenna unit 6 to emit a low-power polling signal. The antenna unit 6, thereby, energizes the RFID tag 2 adjacent to the operator 10 as soon as the sensor unit 4 generates a signal indicative of the operator 10 grasping the tray 8. The energized RFID tag 2 identifies itself by emitting a device identification (e.g., a tier identification or tier number) as a response signal that the operator's antenna unit 6 detects, as indicated by an arrow A2. The antenna unit 6 forwards the device identification, i.e., the identity of that RFID tag 2 together with an ID information identifying the operator 10 and being stored within the antenna unit 6, e.g., an identity code assigned to that operator 10 via the antenna unit 6 carried by the operator 10, to the control system 14, as indicated

by an arrow A3.

[0026] As the device identification of the currently active RFID tag 2 allows identifying the RFID tag 2, and, hence, its location at a particular tier, and only one operator 10 is standing in front of a tier, the control system 14, which knows via the pushed button 20 that the tier identified by the device identification is in the process of being swept, associates and identifies via the received ID information the operator 10 (i.e., the one who pushed the button 20) as performing the current sweeping operation at the output. The control system 14 "knows" by means of the sort plan what destination is currently assigned to the output for which the operator 10 performs the current sweeping operation.

[0027] Then, while the identified operator 10 continues to grasp the tray 8 and moves the tray 8 away from the other trays 8 of the sorting system 1, the control system 14 sends information, e.g., destination, date and time, and/or bar code information, to the identified operator 10, but not the other operators 10, as indicated by an arrow A4. The information is transferred from the control system 14 to the identified operator's antenna unit 6 (arrow A4), and then from the antenna unit 6 to the RFID device 12, as indicated by an arrow A5. The RFID device 12 is configured to receive and store the information in a memory device, such as a memory chip.

[0028] For ease of illustration, Fig. 1A does not depict the complete sweeping operation performed by the operator 10. In particular, Fig. 1A does not depict that the operator 10 moves away from the outputs and the other trays 8 of the sorting system 1. However, it is contemplated that when the information is transferred from the antenna unit 6 to the RFID device 12 (arrow A5) the tray 8 and, hence, its RFID device 12, handled by the operator 10 is the only RFID device 12 within reach of the signal emitted by the antenna unit 6. The information is, therefore, only transferred to the RFID device 12 of the currently handled tray 12.

[0029] The process that stores the information in the RFID device's memory may be referred to as "writing" to the RFID device 12. If the RFID device 12 is an electronic label having a display, the information includes all instructions the electronic label needs to display the information, e.g., the destination information. Other information may include the date and time of the sweeping operation, and/or the name/number/location of the mail processing system.

[0030] In the illustrated embodiment, the cycle of identifying an operator 10 relative to a tier and, hence, a tray 8, and writing to the RFID device 12 takes place while the sensor unit 4 indicates the operator 10 is grasping the tray handle. Once writing to the RFID device 12 is finished, as shown in Fig. 1B, the RFID device 12 displays the destination of the tray 8 and/or its content, e.g., "Munich." In this regard, it is contemplated that the RFID device 12 may not only display the stored information in human-readable form, but also as a bar code.

[0031] Advantageously, the control system 14 sends

the destination information (e.g., Munich) only to the identified operator 10 that is currently performing the sweeping at a certain output (e.g., the one assigned to the destination "Munich"). While the operator 10 is still grasping the tray 8 that is to be labeled with "Munich" as destination, the control system 14 writes that destination to the tray's RFID device 12. The risk of mislabeling a tray 8 is, therefore, eliminated.

[0032] Certain handling processes may allocate only a relative short period of time for handling an object 8. While the allocated period of time may be sufficient for identifying the operator 10 and writing the destination information to the RFID device 12, the period of time may under certain circumstances be too short for enough energy to be transmitted from the antenna unit 6 to the RFID device 12 to complete the "development" of the displayable information on the display of the RFID device 12, even though the RFID device 12 internally has been "written" with the information to be developed and displayed. One embodiment, therefore, is configured to irradiate the RFID device 12 with electromagnetic energy from antennas after the operator 10 released the tray 8. For example, the operator 10 may place the tray 8 in a transport container or cart, or onto a conveyor belt. In either case, each RFID device 12 is then subject to radiation from one or more antennas, for example, while passing an antenna, e.g., mounted adjacent to a conveyor belt, a gate/tunnel or the cart.

[0033] As a plurality of operators 10 work at the outputs of the sorting system 1, the control system 14 may on occasion yield ambiguous results due to two or more operators 10 sweeping trays 8 in adjacent outputs so that more than one antenna units 6 are in communication with the same RFID device 2 leading to ID signals identifying more than one operator 10. In such a situation, the control system 14 recognizes the adjacency condition and resolves the conflict by arbitrarily choosing one of the operators 10 and requesting, e.g., via a pre-stored audio message, or other means, the chosen operator 10, e.g., via the headset 22, to press the button 20 again. The retransmission of the outlet button signal indicates which subject operator 10 is the one in front of a given outlet and any operator ambiguity is resolved. The subsequent writing of information to the respective tray RFID device 12 proceeds in the manner detailed above.

[0034] Referring again to the equipment of the operators 10, in one embodiment, the antenna unit 6 is configured to continuously transmit a polling signal, and to receive a response signal from any RFID device 2, 12 that is within reach of the polling signal. As known in the art, the RFID device 2, 12 emits a signal in response, which the antenna unit 6 detects. The antenna unit 6, however, is configured to disregard any response signal until the operator 10 grabs an object 8. As soon as the operator 10 grabs the object 8, the sensor unit 4 detects that activity and sends a sensor signal to the antenna unit 6. Upon receipt of the sensor signal, the antenna unit 6 begins processing of the response signals based on the

assumption that, now that the operator 10 grabs an object 8, one of the potentially several response signals originates from the RFID device 2, 12 of interest. This RFID device 2, 12 is assumed to be closest to the antenna unit 6, and, hence, emits a response signal that causes a high signal strength in the antenna unit 6. The antenna unit 6 selects the strongest response signal as originating from the tier in front of which the operator 10 stands, and forwards the selected response signal to the system controller 14 for further processing.

[0035] According to another embodiment of the system, the antenna unit 6 emits a polling signal only when the operator 10 grabs the tray 8. That is, the sensor signal generated when the operator 10 grabs the tray 8 triggers the antenna unit 6 to start polling any RFID device within reach of the polling signal. Based on time and motion associated with the application and operational environment involved, the polling can be initiated after a pre-specified time delay after the sensor unit 4 indicates retention of a tray 8. Before such an event, the antenna unit 6 is inactive. While the operator 10 grabs the tray 8, the response signal emitted from the tier in front of which the operator 10 stands coincides with the sensor signal, and is likely the strongest response signal received while the operator 10 grabs the tray 8. The processor then evaluates that response signal. As soon as the operator 10 releases the tray 8 the sensor signal, and, hence, the polling terminate.

[0036] Figs. 2A - 2C illustrate exemplary embodiments of the sensor unit 4. The sensor unit 4 includes at least one pressure sensor 24, at least one stress sensor 26 and an interface unit 28 coupled to the sensors 24, 26. In the illustrated embodiment, the sensors 24, 26 are mounted to a support 30 having a glove-like configuration that secures the sensors 24, 26 to the operator's hand and holds them in place during use. The support 30 may be made of an elastic fabric that is permeable for air and moisture for improved comfort. The elastic material allows the operator to easily insert a hand and to move the fingers, yet snugly secures the sensors 24, 26.

[0037] However, it is contemplated that the sensor unit 4 is not limited to the illustrated glove-like configuration of the support 30, and that the sensor unit 4 may have any other configuration that secures the sensors 24, 26 to the operator's hand and holds them in place during use. For example, the support 30 may be shaped similar to a pool/billiard glove that covers the thumb, the middle finger, the index finger, and parts of the palm and the back of the hand. In such an embodiment, the sensors 24, 26 are secured to at least one of the middle and index fingers.

[0038] The interface unit 28 is for coupling the sensors 24, 26 to the antenna unit 6. This coupling may occur via wire or wireless. Accordingly, the interface unit 28 may include a cable connector or a transmitter unit for wireless communication, e.g., according to the Bluetooth® standard.

[0039] As shown in the embodiment of Fig. 2a, the sen-

sensor unit 4 includes four pressure sensors 24 that the support 30 secures to the inner sides of four fingers (upper fingers sometimes referred to as "digits"). In the illustrated embodiment, no pressure sensor is assigned to the thumb, although it is contemplated that in another embodiment at least one of the sensors 24, 26 is assigned to the thumb. However, it is contemplated that less than four fingers are provided with pressure sensors 24. In one embodiment, wires 32 that run along the palm area connect each pressure sensor 24 to the interface unit 28. The pressure sensors 24 are positioned so that pressure is applied to at least one of them as soon as the operator 10 grabs, for example, a handle of a tray 8.

[0040] As shown in the embodiment of Fig. 2B, the sensor unit 4 includes four stress sensors 26 that the support 30 secures to the outer sides of four fingers, preferable over the knuckles or finger joints, or both. Again, in the illustrated embodiment, no stress sensor is assigned to the thumb, and less than four fingers may be provided with stress sensors 26. In one embodiment, wires 34 that run along the back of the hand connect each stress sensor 26 to the interface unit 28. The stress sensors 26 are positioned so that at least one of them is subjected to stress as soon as the operator 10 closes the hand.

[0041] In the illustrated embodiment, the wires 32, 34 connect the sensors 24, 26 to the interface unit 28. However, in other embodiments, the sensors 24, 26 couple to the interface unit 28, or to the antenna unit 6 via a wireless connection.

[0042] Each stress sensor 26 may be configured to extend only over a knuckle or a finger joint. In another embodiment, a stress sensor 26 may be configured long enough to extend over both a knuckle and a finger joint. In a further embodiment, a stress sensor 26 may be configured as a two-part unit, one part for a knuckle and one part for a finger joint, as depicted in Fig. 2B.

[0043] The sensors 24, 26 used in the sensor unit 4 are in one embodiment transducers that convert a mechanical load (pressure or tension) to an electrical signal. For example, the sensors 24, 26 may be based on a piezoelectric material that generates a voltage upon deformation. The generated voltage is then interpreted as a sensor signal. A piezoelectric material is commercially available, for example, from Morgan Electro Ceramics, or CTS Corporation.

[0044] In the embodiment shown in Fig. 2C, the operator 10 grabs the handle of an object 8 (tray). In that situation, the handle presses against at least one pressure sensor 24, whereas each bent finger tensions the respective stress sensor 26. In one embodiment, the sensor unit 4 is considered to be engaged only when both the pressure and stress sensors 24, 26 are concurrently activated. However, it is contemplated that in certain situations less than the four pressure sensors 24, or less than the four stress sensors 26 may be subject to a load. To consider such situations, the sensor unit 6 may be viewed as engaged when, for example, two pressure

sensors 24 and two stress sensors 26 generate signals. These sensors 24, 26 respond when the operator 10 grasps, for example, the handle of the tray 8, where the main grasping effort typically involves the foremost part of the hand and where the fingers are drawing inward in a partial clench. At this instance in time, the operator's sensor unit 4 invokes the antenna unit 6 to begin processing at least one RFID response signal. If no RFID response signal is received, e.g., due to a missing or damaged RFID tag 2 on the tiers 16, 18, the operator 10 is notified to that effect.

[0045] The degree of stress required to register as a flex of the sensor unit 4 is determined with respect to predetermined threshold characteristics of the sensor unit 4. When both the pressure sensors 24 and the stress sensors 26 simultaneously exceed first and second threshold values, respectively, a tray 8 is deemed to be grasped by the operator 10.

[0046] It is contemplated that the handling of objects 8 involves a variety of hand movements and that for certain applications the operator 10 may be equipped with two sensor units 4, one at each hand. During the operator's manual transfer of objects 8 from an outlet, i.e., during the sweeping process, on occasion two hands may be used without necessarily a hand grasp, e.g., due to the operator's preference. To allow such a two-hand transfer during sweeping, each sensor unit 4 may be provided with a palm-area sensor. In such a situation, both sensor units 4 indicate simultaneous interaction with the object 8 because the operator 10 likely places the object 8 and with it the RFID tag 12 essentially center and forward of the operator 10. For example, the operator 10 may press with both hands against the object 8 so that the palm-area pressure sensor of each sensor unit 4 generates a signal, but the pressure and stress sensors 24, 26 may not. Alternatively, the operator 10 may press with one hand and grasp with the other, or grasp with both hands. These activities are interpreted as a two-hand transfer of an object 8.

Claims

1. A method of handling an object (8) in a processing system (1) having at least one output arranged in at least one column, wherein the object (8) is provided with a first electronic identification (ID) device (12), and wherein a second electronic ID device (2) is assigned to a column, the method comprising:

receiving a first signal indicative of a need for a transfer of the object (8) by an operator (10) at a predetermined output;
receiving a second signal indicative of the operator (10) grasping the object (8) at the predetermined output;
energizing the second ID device (2) to emit a signal containing a device identification;

- determining the device identification and an ID information identifying the operator (10) grasping the object (8) at the predetermined output; and
in response to the first and second signals, transmitting data from a control system (14) via the identified operator (10) to the first ID device (12) of the object (8) to store the data on the first ID device (12). 5
2. The method of Claim 1, further comprising:
- determining that the second signal is no longer received, which is indicative of a release of the object (8) by the operator (10), and
irradiating the first ID device (12) with electromagnetic energy to provide energy to the first ID device (12) to process the data. 10 15
3. The method of Claim 2, wherein processing the data includes displaying at least some of the data on a display of the first ID device (12). 20
4. The method of one of Claims 2 and 3, wherein irradiating the first ID device (12) includes activating an antenna in proximity of the object (8). 25
5. The method of one of Claims 1 - 4, wherein the second signal is generated by a signaling device (20) activated by the operator (10), and wherein the second signal is generated by a sensor unit (4) carried by the operator (10). 30
6. The method of Claim 5, further comprising, if the device identification is detected via more than one operator (10) leading to ID information identifying more than one operator (10), notifying one of the operators (10) to reactivate the signaling device (20), and identifying the notified operator (10) as the one handling the object (8) at the predetermined output. 35 40
7. The method of one of Claims 1 - 6, wherein energizing at least one of the second ID devices (2) includes operating an antenna unit (6) to continuously transmit a polling signal, and wherein any detected device identification is disregarded unless the first signal is received. 45
8. The method of one of Claims 1 - 6, wherein energizing at least one of the second ID devices (2) includes operating an antenna unit (6) to transmit a polling signal only if the second signal is received. 50
9. The method of one of Claims 7 - 8, further comprising transmitting the ID information identifying the operator (10) grasping the object (8) at the predetermined output from the antenna unit (6) to a control system (14). 55
10. A system for handling objects (8) in a processing system (1) having at least one output arranged in at least one column, wherein each object (8) is provided with a first electronic identification (ID) device (12), and wherein a second electronic ID device (2) is assigned to a column, comprising:
- a signaling device (20) provided at each output and upon activation by an operator (10) configured to generate a first signal indicative of a need for a transfer of the object (8) by the operator (10) at a predetermined output;
a sensor unit (4) configured to be worn at a hand of the operator (10) and having at least one first pressure sensor (24) and at least one stress sensor (26), wherein the sensor unit (4) is configured to generate a second signal when pressure and stress are applied to the sensor unit (4) signal indicative of the operator (10) grasping the object (8) at the predetermined output;
an antenna unit (6) configured to energize the second ID device (2) to emit a signal containing a device identification, and to receive the signal containing the device identification, wherein the antenna unit (6) is further configured to couple to the sensor unit (4);
a control system (14) coupled to the signaling device (20) and the antenna unit (6) to detect the first and second signals, the device identification and an ID information identifying the operator (10) grasping the object (8) at the predetermined output, and configured to transmit data via the identified operator (10) to the first ID device (12) of the object (8) to store the data on the first ID device (12) in response to the first and second signals.
11. The system of Claim 10, wherein the antenna unit (6) is configured to couple to the sensor unit (4) via one of a wire connection and a wireless connection.
12. The system of Claim 10, wherein the first ID device (12) is configured display information based on the data.

FIG 1A

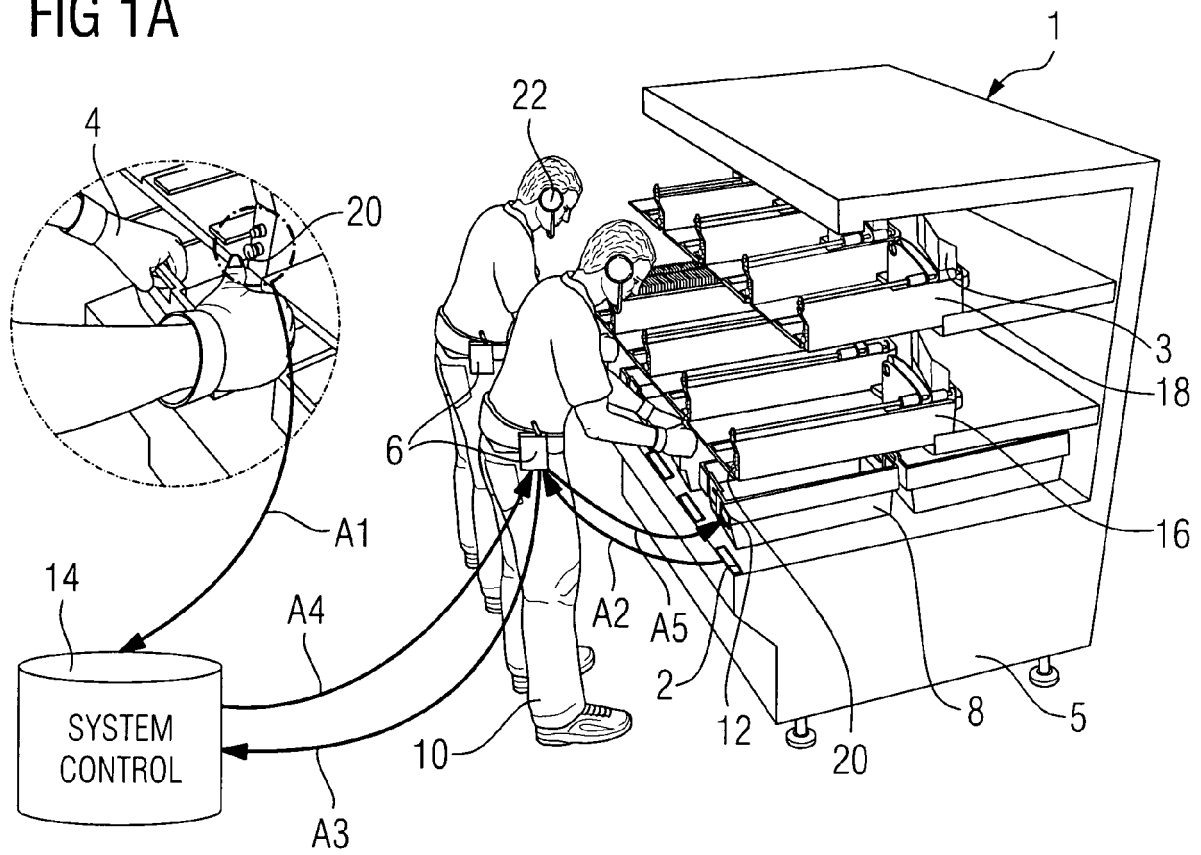


FIG 1B

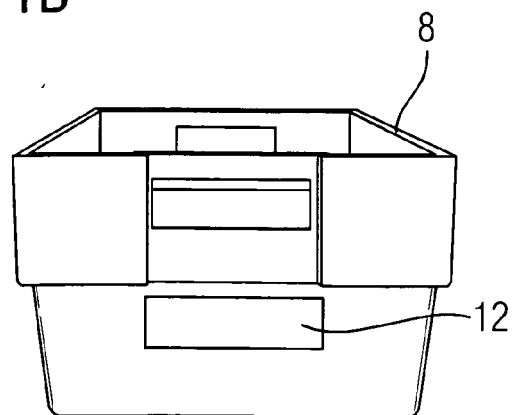


FIG 2A

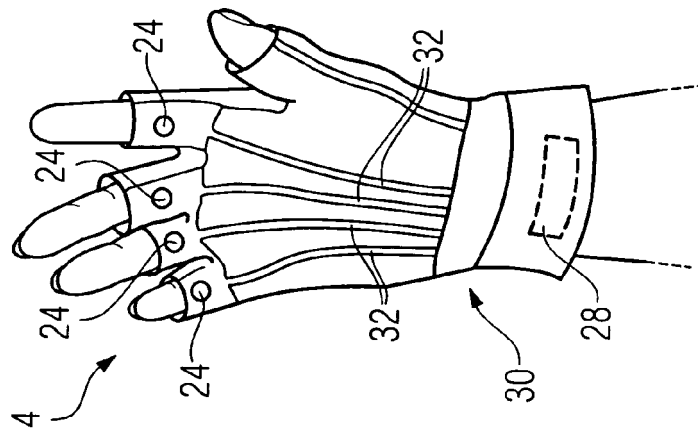


FIG 2B

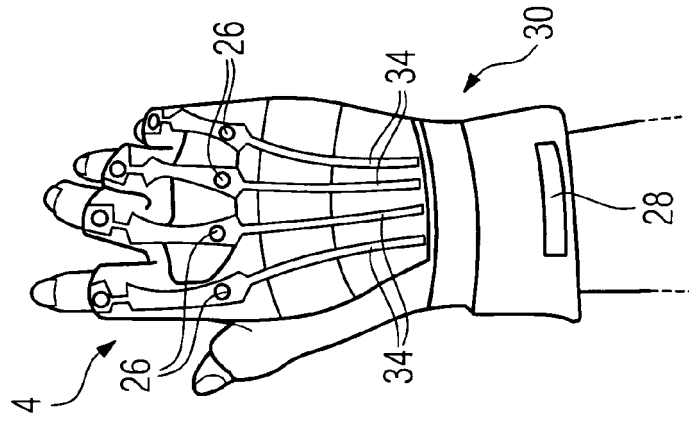
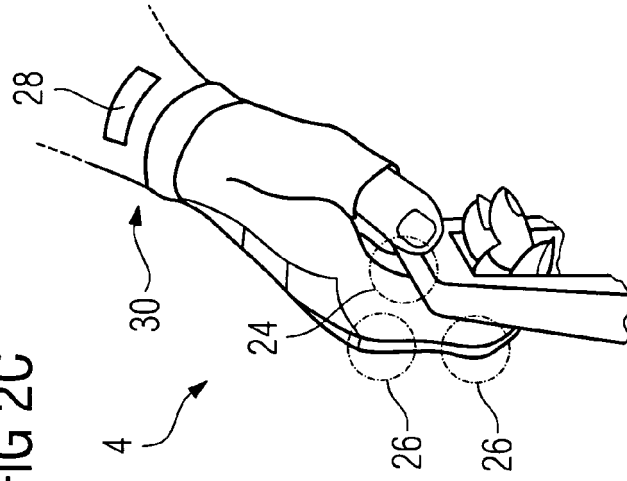


FIG 2C





EUROPEAN SEARCH REPORT

Application Number
EP 08 00 9595

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