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(54) **Sorting system and method using a portable device**

(57) The invention relates to a system (1) for sorting and shipping objects (4) comprising multiple terminals (2) each assigned to a certain shipping destination, a sorting station (3) to forward the objects (4) to one of the terminals (2) and a portable device (5, 5a, 5b) to assist the forwarding of the objects (4), wherein the portable device (5, 5a, 5b) comprise a reading unit (51) for receiving shipping information (41) from the object (4), a linking unit (52) with a re-writable memory (53) storing a list of the terminals (2) and the assigned shipping destination,

where the linking unit (52) is suitable to provide at least one sorting information (54) by correlating the received shipping information (41) to at least one terminal (2), and a display unit (55) for displaying the sorting information (54) to the operator (6) using this portable device (5, 5a, 5b) to forward the object from the sorting station to the terminal, where the sorting information (54) comprise at least one terminal (2) to which the object (4) has to be forwarded. The invention further relates to a method to operate such a system (1).

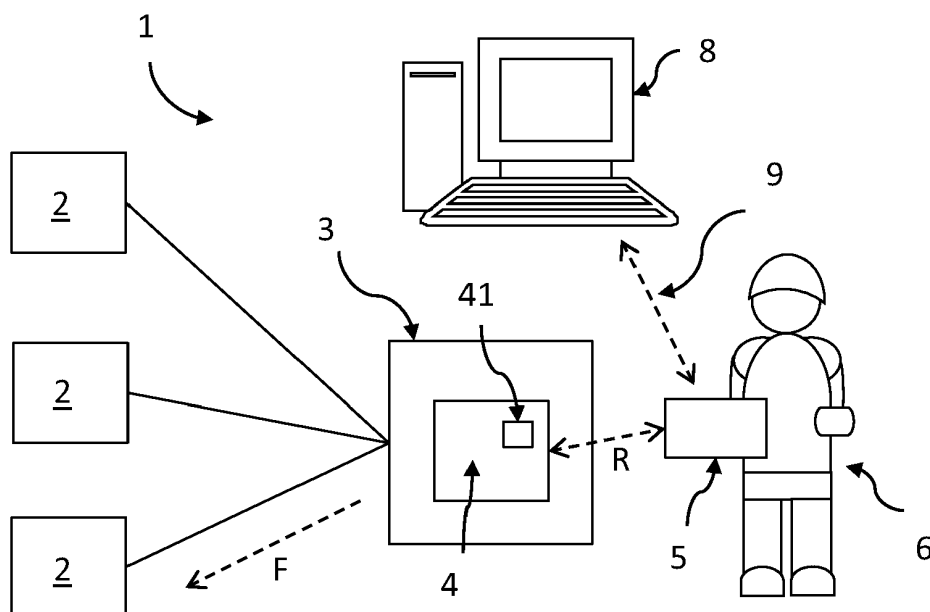


Fig.1

Description

FIELD OF THE INVENTION

[0001] The invention relates to a system for sorting and shipping objects and a corresponding method to operate such a system

BACKGROUND OF THE INVENTION

[0002] Wrongly sorted shipments are a constant challenge in daily shipping operations, where the human factor still plays one major cause of wrong shipments. Therefore large logistic centers apply sophisticated highly automated sorting machines to minimize or to exclude the human factor during sorting. Such a solution is not applicable for small distribution centers due to high investment and maintenance cost of such sorting machines. In small logistic centers the objects to be shipped are usually sorted manually, where the decision to place the object to a certain cage or terminal assigned to a certain shipping destination might be taken wrong, e.g. due less concentrated attention to the right sorting, misunderstanding of shipping information or non-sufficient training. The amount of wrongly sorted objects easily exceeds one million incorrect shipments for large logistic companies. To minimize sorting errors during manually sorting would require a large effort of man power required for double and triple checking.

SUMMARY OF THE INVENTION

[0003] It is an object of the present invention to provide a system to assist the operator during the sorting process in order to reduce the number of wrongly sorted objects and to provide a method to operate such a system.

[0004] The object is solved by a system for sorting and shipping objects comprising multiple terminals each assigned to a certain shipping destination, a sorting station to forward the objects to one of the terminals and a portable device to assist the forwarding of the objects, wherein the portable device comprise a reading unit for receiving shipping information from the object, a linking unit with a re-writable memory storing a list of the terminals and the assigned shipping destination, where the linking unit is suitable to provide at least one sorting information by correlating the received shipping information to at least one terminal, and a display unit to display the sorting information to an operator using this portable device to forward the object from the sorting station to the terminal, where the sorting information comprise at least one terminal to which the object has to be forwarded. The system according to the present invention helps the operator responsible for selecting an appropriate terminal for further shipping of the object to forward the object to the right terminal. The decision of the operator is not only based on his subjective opinion. The shipping information received from the object is transferred by the portable de-

vice into an advice to the operator how to forward the object, which is suited to correct formally wrong forwarding decisions drawn from e.g. tired operators, less educated operators or misunderstood shipping information.

5 The advice to the operator comprises visual and/or acoustical messages. The operator can use the portable device during his work, wherever he is located in the sorting station. The portable device can be easily handed over to another worker of the next shift. The device is
10 variable applicable at any logistic center independently from the flow of objects or arrangement of carrier belts carrying objects to be sorted.

[0005] The term "object" denotes any kind of item to be shipped from one place to another place regardless of size, weight and type of items. As an example, an object according to the present invention is a parcel. The term "terminal" denotes any area, where objects are collected to be further transported to a certain destination. A terminal according to the present invention comprises
15 a pallet, a cage, a storage area or a part of a storage area, a hub, a car, a truck, an aircraft, a certain wagon of a train, etc. The objects arrive randomly at a sorting station (e.g. via a carrier belt), where the objects have to be sorted as a function of the recipients address of the objects. Here the sorting may be arranged as a function
20 of the continent, mainland, country, area, town, sub-area of a town, where the recipients address is located. Where sorting is executed manually, the responsible operator has to forward the object to the right terminal corresponding to the recipients address. The portable device is able to read and analyze the recipients address in order to provide information of the corresponding terminal to the operator in order to assist him to forward the object to the appropriate terminal. The forwarding to the terminals
25 may be executed by additional carrier belts. The term "forwarding" denotes any dispatching of the object from the sorting station to a certain terminal.

[0006] The reading unit can be any suitable unit able to read the shipping information available on the object
30 in written, coded or any other format. The term "shipping information" can be any kind of information corresponding to a certain recipient address or an address of another logistic center, which the object has to pass to be shipped to the recipients address. As an example, shipping information comprises country codes, area codes, zip codes, names, address, IATA codes (IATA = international air transportation association) and information linked to the previous data.

[0007] The list of terminals and the assigned shipping destinations denote any kind of computer data containing data fields of terminals (e.g. terminal name or number) and shipping destinations in a linked format. As an example, the list might be a look-up table with columns of terminals and the corresponding shipping destinations.
35 The list is stored in a re-writable memory, which can be any kind of suitable re-writable memories offering the required storage capacity, e.g. solid state memories, chips, smart cards, flash cards, EEPROMs, DRAMs, etc. As an

example, a flash card memory as the re-writable memory may be uploaded in a suitable card reader/writer connected to a data management unit separate from the portable device and inserted into the portable device when the portable device will be used by an operator at the sorting station. In this case, the portable device may comprise a port to insert and to take out the flash card. The linking unit correlates the shipping information to an appropriate terminal. Therefore the linking unit comprises a suitable software to read the list of terminals and the assigned shipping destinations, to analyze the shipping information and to assign (link) a recipients address (or at least a suitable destination) derived from the shipping information to a certain terminal via the shipping destination assigned to the terminal, which is the sorting information for the operator. In case of insufficient shipping information or ambiguous shipping information, the sorting information may comprise more than one terminal or no terminal. In this case the operator is triggered to further check the object manually and/or visually to select the appropriate terminal from the list of proposed terminal. Alternatively, the sorting information may contain a single special terminal, where all objects with ambiguous destination are forwarded to for further inspection.

[0008] The term "display" denotes any kind of an information providing sub-device. The display may be a common display, where characters and/or numbers can be shown. Alternatively, a display may be an array of lamps (e.g. LEDs) assigned to individual terminals (written as characters and/or numbers beside the corresponding LED). People skilled in the art may consider alternative display units within the scope of this invention. In a referred embodiment, the display unit is suitable to display the read shipping information, either mandatory or on demand of the operator.

[0009] In an embodiment the system further comprises a docking station to recharge the portable device comprising at least one rechargeable battery to operate the portable device. After finishing the shift, the operators place the portable device into a docking station to deposit the device at a known location in order to take it out next day for the next shift. During the docking time (time, where the portable device is placed into the docking station), the portable device (here the rechargeable batteries of the portable device can be recharged in order to provide a portable device being operational for the next shift.

[0010] In another embodiment the system further comprises at least a data management unit, e.g. a computer, to administrate logistical data and to update the list of the terminals and the assigned shipping destination stored in the portable device via a data connection to the portable device. The logistical data may comprise any data required for shipping objects or data related to the shipment of objects. The logistic data comprise the list of the terminals and the assigned shipping destination, which can be varied by a data management operator on demand, e.g. by adding new terminals to the present ter-

minals and/or by changing the assigned destination of one or more terminals. The possibility to transfer the updated list to the portable device provides a sorting system, which is variable and adaptable to new distribution schemata. The data connection can be any suitable data connection enabling an update of the lists stored in the portable devices. Examples of suitable data connections are cable connections between data management unit and portable devices or wireless connections such as wireless LAN systems. People skilled in the art may consider other data connections within the scope of this invention. In a preferred embodiment the docking station for the portable device is suitable to establish the data connection between the data management unit and the portable device when placed into the docking station. Portable device and docking station may comprise connection ports like a docking station for a lap top computer.

[0011] In an alternative embodiment the portable device comprises a data receiving unit, preferably a RFID transponder, to receive the updated list of the terminals and the assigned shipping destination from the data management unit by a wireless data transfer technique. Examples for a wireless data transfer technique are radio communication, infrared communication, or preferably RFID techniques. A receiving unit as a RFID transponder comprises an antenna, an analog circuit to send and receive the transferred data (a so-called transceiver) and a digital circuit with a memory to store the received data. The memory here is a re-writable memory in order to be updatable. The transponder may comprise an individual coding to be distinguishable from other portable devices. The receiving unit, e.g. the transponder, of the portable device may send a confirmation to the data management unit after receiving the updated list, preferably together with the individual code of the portable device. In this case, the data management unit is able to check, which portable devices comprise updated lists of terminals and assigned shipping destinations.

[0012] People skilled in the art are able to select suitable transponder as the receiving unit of the portable device according to the data transfer rate, memory storage size, operating distance etc. The transponder may be operated at 128 kHz, 13,56 MHz, 865-969 MHz or 2,45 or 5,8 GHz depending on the regional requirements.

[0013] In another embodiment the system comprises multiple portable devices, where the data receiving unit of a first portable device is suitable to transfer the updated list of the terminals and the assigned shipping destination to a data receiving unit of a second portable device not comprising the updated list of the terminals and the assigned shipping destination. If only some of the portable devices could be updated by the data management unit via the data connection, the updated portable devices may transfer the updated list to portable devices being located closely at least for a certain time period in order to distribute the updated list as fast as possible to all available portable devices. A possible reason for updating only a part of the portable devices via the data con-

nection to the data management unit can be the location of some portable devices outside the area, where the data connection to the data management unit is available. The updating process via data connection to the data management unit in parallel to the transfer of the updated list from one portable device to another portable device will increase the updating speed and therefore will further decrease the number of wrongly sorted objects. For the update of the list executed by the portable devices, the lists have to comprise an identification code defining the version of the present list. For example, a higher identification code number indicates the newer version of the list of terminals and assigned shipping destinations. If a portable device recognizes the sending of a list with a higher identification number, the present list of the portable device will be overwritten by the new list. People skilled in the art may consider other techniques to identify the version (or date) of the list of terminals and assigned shipping destinations within the scope of this invention.

[0014] In another embodiment the portable device comprises a data insert unit to enable the operator to mark the read shipping information for being stored as marked shipping information in the re-writable memory of the portable device and/or to insert, amend and/or overwrite the shipping information. The operator marks the read shipping information if the portable device cannot assign a suitable terminal or multiple eventually suitable terminals for the corresponding object or if the portable device assigns the terminal dedicated for further inspection of the object. The marking may be executed manually by the operator. Preferably, the portable device marks the shipping information automatically depending on the assigned terminals, e.g. no terminal, multiple terminals, or a specific terminal for further inspection. The operator may also mark the read shipping information even when a suitable terminal is assigned to the object, if he detects incomplete shipping information. The marked shipping information could be incomplete shipping information still sufficient for forwarding the object to a terminal or could be eventually or obviously wrong shipping information. In case of no or ambiguous shipping information present on the object, the operator has to decide manually, to which terminal the object has to be forwarded. He is eventually able to derive lacking shipping information from other information sources and can add shipping information to the information read by the portable device in order to enable the portable device to assist him by selecting the appropriate terminal. This avoids forwarding the object to an inspection terminal, where all objects may be forwarded in case of unclear destination and will therefore increase the shipping speed. The shipping information may be amended, inserted or overwritten by the operator manually. Preferably the amended, inserted or new shipping information overwriting the marked shipping information is stored together with the marked shipping information in the re-writable memory in a linked manner in order to assign the correct shipping information to the previously marked

shipping information recognized as being wrong. The term "wrong" denotes any kinds of shipping information failures such as missing shipping information, partly not readable shipping information, not matching parts of the total shipping information or no shipping information. Marking (or tagging or highlighting) the shipping information can be executed in different manners. As an example, marking may denote the assignment of the shipping information to a suitable code number indicating the kind of wrong shipping information such as missing country, missing town, missing street, missing recipient, non-readable country, town, street, recipient, non-matching details of the shipping information etc. The operator may be able to scroll the stored marked shipping information in the display unit via the data insert unit comprising a scroll button in order to periodically analyze and to identify repeating shipping information pattern being marked to find-out the cause of wrong shipping information attached to the objects along the logistic chain.

[0015] In a preferred embodiment the portable device is suitable to transfer the marked shipping information, preferably together with the inserted, amended shipping information and/or shipping information overwriting the marked shipping information, to the data management unit via the data connection. The portable device may transfer the marked shipping information to the data management unit during the docking time via a data cable as the data connection or wireless during the operation of the portable device. The marked shipping information will be stored in the data management unit. The marked shipping information may be gathered as a function of the kind of marks assigned to the shipping information. The mark may denote a certain failure pattern of the shipping information different to differently marked shipping information with different failure patterns. The term "pattern" denotes a certain combination of shipping information parts. A pattern "A" may denote shipping information with missing town of the recipient. Another pattern "B" may denote shipping information with missing street of the recipient. Other pattern may denote other missing and/or non-matching and/or non-readable shipping information or parts of the shipping information. Correspondingly the mark "A" denotes the pattern "A", the mark "B" denotes the pattern "B" and so on. A repeated wrong shipping information pattern may be communicated to previous stations along the logistic chain together with the corresponding mark or via the corresponding mark. An identified and solved failure cause for wrong shipping information will reduce the number of wrongly sorted objects. The term logistic chain denotes all parts of the way the object travels from the sender to the recipient.

[0016] In a preferred embodiment the data management unit is arranged to provide an alarm signal in case of repeated occurrence of a certain marked shipping information, e.g. a certain wrong pattern, to the portable device and/or to other data management units along the logistic chain. The data management unit may be connected to other data management units of logistic centers

or stations in the logistic chain which were passed by the object so far with the shipping information now being marked. The alarm signal may be any kind of signal recognizable for the operators and/or the connected other data management units within the same logistic center and/or within other logistic centers along the logistic chain, where the basic cause of the wrong shipping information, which is recognized and marked later in the logistic chain, might be located. The alarm signal may be an acoustic, a visual and/or an electric signal. The electronic signal may be an e-mail or any other kind of an electronic message sent out from the data management unit, where the repeated occurrence is recorded. A repeated occurrence may denote a number of similar or equal failures leading to marked shipping information larger than 3, 5, 10 or any other number considered as suitable from people skilled in the art. The alarm signal may also be sent out to the portable devices connected to the data management unit to enhance the attention of the operators to certain failure pattern of shipping information. In case of electronic alarm signals, the alarm signals may comprise the marked shipping information (failure pattern), the number of occurrence of the specific failure pattern and the eventually inserted amended and/or new shipping information to overwrite the marked shipping information (solution for the recognized failures). The submission of the failure pattern will lead to an improved sorting-out process for corresponding objects earlier in the logistic chain. The additional submission of solutions of the recognized failures will result in an improved sorting and distributing of the objects along the logistic chain.

[0017] In a preferred embodiment of the system for sorting and shipping objects, the system is arranged to gather marked shipping information and corresponding corrected shipping information and to distribute the corrected shipping information assigned to certain marked shipping information to the portable devices in order to overwrite the marked shipping information with corrected shipping information automatically. Such a system will be a learning system denoting a system insert or assign correct shipping information for or to marked shipping information in order to provide suitable shipping information to the portable devices for forwarding the objects to the right terminal without further required action of the operator at the sorting station to correct the shipping information. The sorting and forwarding process is accelerated because the number of failures requiring further actions of the operators is reduced. The correct shipping information may be obtained from a data base (e.g. an address data base or a customer data base), where the data management unit searches for the right shipping information applying search criteria such as recipient data, sender data etc. The correct shipping information may also be obtained by the operator from other information sources (e.g. address books, street maps etc.) and inserted into the data management unit by the operator.

[0018] In another embodiment the portable device is

a hand scanner in order to utilize eventually present devices for this new application. In another embodiment the reading unit comprises at least one of the elements of the group comprising bar code scanner, CCD camera, RFID reader to read the shipping information present on the object. The applied technique depends on the type of shipping information present on the objects. As an example, shipping information comprises country codes, area codes, zip codes, names, address, and information linked to the previous data written in clear characters and numbers and/or coded as bar codes and/or codes as two-dimensional graphic and/or coded as RFID tag. The portable device may comprise multiple reading units applying different reading technologies to be able to read different kinds of the shipping information.

[0019] The invention further relates to a method for operating a system for sorting and shipping objects according to the present invention comprising the steps of

- reading shipping information as present on an object with a portable device,
- correlating the shipping information to at least one terminal assigned to a certain shipping destination by a linking unit comprising a re-writable memory storing a list of the terminals and the assigned shipping destinations,
- displaying the at least one terminal on a display unit of the portable device to assist an operator by deciding to which terminal the object has to be forwarded, and
- forwarding the object to one of the displayed terminals by the operator.

[0020] In an embodiment the method further comprises the step of marking the read shipping information for being stored as marked shipping information in the re-writable memory of the portable device and/or inserting, amending or overwriting the shipping information via a data insert unit of the portable device in case of no shipping information or doubtful shipping information. The marking may be executed manually by the operator or automatically by the portable device as a function of the terminals assigned to the object from the present shipping information.

[0021] In another embodiment the method further comprises the step of placing the portable device into a docking station when not used to recharge the portable device comprising at least one rechargeable battery.

[0022] In another embodiment the method further comprising the step of updating the list of the terminals and the assigned shipping destination stored in the portable device via a data connection between a data management unit comprising logistical data and the portable device, preferably a periodically updating. A periodical executed update process ensures that all portable devices comprise the latest list of terminals and assigned shipping destinations to further reduce the number of wrongly sorted objects. Preferably, the data connection

is established by placing the portable device in the docking station or is established to the data receiving unit of the portable device with a wireless data transfer technique.

[0023] In another embodiment the method further comprises the step of transferring the marked shipping information, preferably together with the inserted, amended shipping information and/or shipping information overwriting the marked shipping information, from the portable device to the data management unit via the data connection.

[0024] In another embodiment the method further comprises the step of transferring the updated list of the terminals and the assigned shipping destination from the data receiving unit of a first portable device to the data receiving unit of a second portable device not comprising the updated list of the terminals and the assigned shipping destination.

[0025] In another embodiment the method further comprising the steps of

- gathering marked shipping information and corresponding corrected shipping information in the data management unit,
- distributing the corrected shipping information assigned to certain marked shipping information to the portable devices, and
- overwriting the marked shipping information read by the portable devices with corrected shipping information automatically.

[0026] The corrected shipping information may be inserted by an operator manually into the data management unit, eventually via other data management units present along the logistic chain connected to said data management unit. Alternatively, the corrected shipping information may be found in data bases like address data bases or customer data bases by a search process executed by the data management unit automatically.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027] These and other aspects of the invention will be apparent from and elucidated with reference to the embodiments described hereinafter.

Fig.1: System according to the present invention

Fig.2: portable device according to the present invention

Fig.3: System according to the present invention with docking station

Fig.4: System with multiple portable devices transferring data to each other

Fig.5: System according to the present invention as a learning system

DETAILED DESCRIPTION OF EMBODIMENTS

[0028] Fig.1 shows the system 1 for sorting and shipping objects 4 comprising multiple terminals 2 each assigned to a certain shipping destination and a sorting station 3 to forward the objects 4 to one of the terminals 2. The forwarding is indicated by the dashed arrow F. The black lines between sorting station 3 and terminals 2 indicate a carrier belt transporting the objects 4 from the sorting station 3 to the terminals 2. The portable device 5 assists the forwarding of the objects 4. The operator 6 holds the portable device 5 into a suitable position for reading the shipping information 41 attached to the object 4. The reading process is indicated by the dashed arrow R. The data management unit 8, here a computer, is connected to the portable device 5 via a wireless data connection 9, e.g. a radio or RFID connection, to provide always the newest list of terminals and assigned shipping destinations to the operator.

[0029] Fig.2 shows the portable device 5 in more details comprising a reading unit 51 for receiving shipping information 41 from the object 4, a linking unit 52 with a re-writable memory 53 storing a list of the terminals 2 and the assigned shipping destination, where the linking unit 52 is suitable to provide at least one sorting information 54 by correlating the received shipping information 41 to at least one terminal 2. Linking unit 52 and re-writable memory 53 are indicated as dashed areas, because these components are located inside the portable device 5. The device 5 further comprises a display unit 55 for displaying the sorting information 54 to an operator. The display unit 55 in this embodiment is a combination of a visible display area and a loudspeaker 55 (indicated as circle at the lower right side of the display) to provide visible and acoustical information to the operator. The portable device 5 further comprises a data insert unit 57, here a small keyboard, and a data receiving unit 56 indicated by the curved lines at the upper right side of the portable device 5. In a preferred embodiment, the portable device 5 is a modified hand scanner.

[0030] Fig.3 shows a system 1 according to the present invention, where the portable device 5 is placed into a docking station 7 in order to be recharged over night to be operational again for the next shift next morning. In a logistical center with a 24h continuing object flow, the number of portable devices 5 may exceed the number of workers (operators) in order to recharge always some of the portable devices 5, which will be exchanged at the docking stations during the shifts. The docking station 7 is connected to a power source 71 to provide electrical energy for the recharging process. For multiple portable devices 5 there may be an array of docking stations or a docking station with multiple ports for placing multiple portable devices into the docking station. The docking station 7 is connected to the data management unit 8 (e.g. a computer) by a data connection 9, here a computer cable to update the list of terminals and assigned shipping destinations stored in the portable device 5 during the

docking time.

[0031] Fig.4 shows the system 1 according to the present invention, where two operators 6 carry two portable devices 5a, 5b. Here the portable device 5a is connected to the data management unit 8 via a wireless data connection 9, indicated by the right dashed arrow. The portable device 5b is outside the range of the wireless data connection 9, thus the portable device 5b does not contain the updated list of terminals and assigned shipping destinations provided by the data management unit 8. The portable devices 5a, 5b are equipped with RFID transponders suitable to exchange data on demand via a data connection 9 established between both portable devices 5a, 5b. Here the portable device 5a transfers the updated list of terminals and assigned shipping destinations received from the data management unit 8 to the other portable device 5b having stored an older list of terminals and assigned shipping destinations, which application might cause sorting errors. The lists of terminals and assigned shipping destinations comprise version numbers with the highest number for the newest list. The portable devices 5a, 5b check the version numbers of the stored lists and exchange the list with the highest number. People skilled in the art may consider other version verification codes within the scope of this invention.

[0032] Fig.5 shows the system according to the present invention as a learning system providing suitable shipping information to the portable devices for forwarding the objects to the right terminal without further required action of the operator at the sorting station to correct the shipping information. The shipping information 41 present on the object 4 is read R by the portable device 5. Here the shipping information 41 is incomplete leading to a marking of the shipping information 41. The marked shipping information is transferred 11 to the data management unit 8 via the data connection 9, either wireless or during the docking time via a computer cable. The data management unit 8 stores the marked shipping information 41 in a suitable data memory, e.g. on a hard disc. A suitable software executed on the data management unit 8 compares the marks of the marked shipping information 41, stores the shipping information 41 as a function of the different marks, counts the number of occurrence of the specific marks and sends out (provides) an alarm signal 10 to the connected other data management units 81 within the logistic chain and/or to the portable devices 5 in order to communicate the occurred wrong and/or incomplete shipping information 41 to other location in order to find out the basic cause of this wrong and/or incomplete shipping information 41 present on the objects 4. Operators 6 at any location within the logistic chain are able to provide corrected shipping information and insert 121 the corrected shipping information into the data management units 8, 81. In this example the operator 6 is located in the logistic center, where the wrong shipping information 41 was detected. He inserts the corrected shipping information in the data management unit 8. Alternatively, the data management unit 8 might be

connected to data bases 13 like address data bases or customer data bases in order to search 122 for a specific shipping information pattern. If a complete shipping information match the marked shipping information 41, e.g. an incomplete address of a known customer as the marked shipping information 41 can be completed by checking 122 the customer data base 13, where the complete address of this customer is stored, the data management unit 8 distribute 14 the corrected shipping information to the portable devices 5, where the corrected shipping information is stored with a link to the marked shipping information 41. If another occurrence of this specific marked shipping information 41 is detected again, the read shipping information 41 will be replaced in the portable device 5 by the corrected shipping information previously received from the data management unit 8 in order to assign a right terminal 2 as the sorting information 54 to the object 4 by the portable device 5. The object 4 will be forwarded to the assigned terminal 2 without any further required action of the operator 6 at the sorting station 3

[0033] While the invention has been illustrated and described in details in the drawings and foregoing description, such illustration and description are to be considered illustrative or exemplary and not restrictive; the invention is not limited to the disclosed embodiments.

[0034] Other variations to the disclosed embodiments can be understood and effected by those skilled in the art in practicing the claimed invention, from a study of the drawings, the disclosure, and the appended claims. In the claims, the word "comprising" does not exclude other elements or steps, and the indefinite article "a" or "an" does not exclude a plurality. The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measures cannot be used to advantage. Any reference sign in the claims should not be construed as limiting the scope.

LIST OF REFERENCE SIGNS

[0035]

1	System for sorting and shipping objects
2	terminal(s)
3	sorting station
4	object
41	shipping information
5	portable device
5a	first portable device
5b	second portable device

51	reading unit		
52	linking unit		
53	re-writable memory	5	
54	sorting information		
55	display unit	10	
56	data receiving unit		
57	data insert unit		
6	operator	15	
7	docking station		
71	power supply of docking station	20	
8	data management unit		
81	other data management unit in the logistic chain		
9	data connection	25	
10	sending (providing) an alarm signal		
11	transferring the marked shipping information	30	
121	inserting the corrected shipping information manually		
122	searching data base to achieve corrected shipping information	35	
13	data base		
14	distributing the corrected shipping information to the portable device	40	
F	forwarding the object		
R	reading the shipping information	45	

Claims

1. System (1) for sorting and shipping objects (4) comprising multiple terminals (2) each assigned to a certain shipping destination, a sorting station (3) to forward the objects (4) to one of the terminals (2) and a portable device (5, 5a, 5b) to assist the forwarding of the objects (4), wherein the portable device (5, 5a, 5b) comprises a reading unit (51) for receiving shipping information (41) from the object (4), a linking unit (52) with a re-writable memory (53) storing a list of the terminals (2) and the assigned shipping destination, where the linking unit (52) is suitable to provide at least one sorting information (54) by correlating the received shipping information (41) to at least one terminal (2), and a display unit (55) for displaying the sorting information (54) to the operator (6) using this portable device (5, 5a, 5b) to forward the object from the sorting station to the terminal, where the sorting information (54) comprises at least one terminal (2) to which the object (4) has to be forwarded.
2. System (1) for sorting and shipping objects (4) according to claim 1, **characterized in that** the system (1) further comprises a docking station (7) to recharge the portable device (5, 5a, 5b) comprising at least one rechargeable battery to operate the portable device (5, 5a, 5b).
3. System (1) for sorting and shipping objects (4) according to claim 1 or 2, **characterized in that** the system (1) further comprises at least one a data management unit (8) to administrate logistical data and to update the list of the terminals (2) and the assigned shipping destination stored in the portable device (5, 5a, 5b) via a data connection (9) to the portable device (5, 5a, 5b).
4. System (1) for sorting and shipping objects (4) according to claim 3, **characterized in that** the docking station (7) for the portable device (5, 5a, 5b) is suitable to establish the data connection (9) between the data management unit (8) and the portable device (5, 5a, 5b) when placed into the docking station (7).
5. System (1) for sorting and shipping objects (4) according to claim 3, **characterized in that** the portable device (5, 5a, 5b) comprises a data receiving unit (56), preferably a RFID transponder, to receive the updated list of the terminals (2) and the assigned shipping destination from the data management unit (8) by a wireless data transfer technique.
6. System (1) for sorting and shipping objects (4) according to claim 5, **characterized in that** the system (1) comprises multiple portable devices (5, 5a, 5b), where the data receiving unit (56) of a first portable device (5a) is suitable to transfer the updated list of the terminals (2) and the assigned shipping destination to a data receiving unit (56) of a second portable device (5b) not comprising the updated list of the terminals (2) and the assigned shipping destination.
7. System (1) for sorting and shipping objects (4) according to any preceding claim, **characterized in that** the portable device (5, 5a, 5b) comprises a data insert unit (57) to enable the operator (6) to mark the read shipping information for being stored as marked

shipping information in the re-writable memory of the portable device and/or to insert, amend and/or overwrite the shipping information (41), preferably the portable device (5, 5a, 5b) is arranged to mark the read shipping information (41) automatically in case of assignment of no terminal, multiple terminals, or a specific terminal for further inspection .

8. System (1) for sorting and shipping objects (4) according to claim 8, **characterized in that** the portable device (5, 5a, 5b) is suitable to transfer (11) the marked shipping information (41), preferably together with the inserted, amended shipping information and/or shipping information overwriting the marked shipping information (41), to the data management unit (8) via the data connection (9).
9. System (1) for sorting and shipping objects (4) according to claim 8, **characterized in that** the data management unit (8) is arranged to provide an alarm signal (10) in case of repeated occurrence of a certain marked shipping information (41) to the portable device (5, 5a, 5b) and/or to other data management units (81) along the logistic chain.
10. System (1) for sorting and shipping objects (4) according to claim 8 or 9, **characterized in that** the system (1) is arranged to gather marked shipping information (41) and corresponding corrected shipping information (41) in the data management unit (8) and to distribute (14) the corrected shipping information (41) assigned to certain marked shipping information (41) to the portable devices (5, 5a, 5b) in order to overwrite the marked shipping information (41) with corrected shipping information (41) automatically.
11. Method for operating a system (1) for sorting and shipping objects (4) according to claim 1 comprising the steps of
 - reading shipping information (41) as present on an object (4) with a portable device (5, 5a, 5b),
 - correlating the shipping information (41) to at least one terminal (2) assigned to a certain shipping destination by a linking unit (52) comprising a re-writable memory (53) storing a list of the terminals (2) and the assigned shipping destinations,
 - displaying the at least one terminal (2) on a display unit (55) of the portable device (5, 5a, 5b) to assist an operator (6) by deciding to which terminal (2) the object (6) has to be forwarded, and
 - forwarding the object (4) to one of the displayed terminals (2) by the operator (6).

12. Method for operating a system (1) for sorting and

shipping objects (4) according to claim 11, further comprising the step marked the read shipping information for being stored as marked shipping information in the re-writable memory of the portable device and/or inserting, amending or overwriting the shipping information (41) via a data insert unit (57) of the portable device (5, 5a, 5b) in case of no shipping information or doubtful shipping information (41).

13. Method for operating a system (1) for sorting and shipping objects (4) according to any of claims 11 to 12, further comprising the step of updating the list of the terminals (2) and the assigned shipping destination stored in the portable device (5, 5a, 5b) via a data connection (9) between a data management unit (8) comprising logistical data and the portable device (5, 5a, 5b), preferably a periodically updating.
14. Method for operating a system (1) for sorting and shipping objects (4) according to claim 13, further comprising the step of transferring (11) the marked shipping information (41), preferably together with the inserted, amended shipping information and/or shipping information overwriting the marked shipping information, from the portable device (5, 5a, 5b) to the data management unit (8) via the data connection (9).
15. Method for operating a system (1) for sorting and shipping objects (4) according to any of claims 11 to 14 with multiple portable devices (5, 5a, 5b) further comprising the step of transferring the updated list of the terminals (2) and the assigned shipping destination from the data receiving unit (56) of a first portable device (5a) to the data receiving unit (56) of a second portable device (5b) not comprising the updated list of the terminals (2) and the assigned shipping destination.
16. Method for operating a system (1) for sorting and shipping objects (4) according to claims 14 or 15 comprising the steps of
 - gathering marked shipping information (41) and corresponding corrected shipping information (41) in the data management unit (8),
 - distributing (14) the corrected shipping information (41) assigned to certain marked shipping information (41) to the portable devices (5, 5a, 5b), and
 - overwriting the marked shipping information (41) read by the portable devices (5, 5a, 5b) with the corrected shipping information (41) automatically.

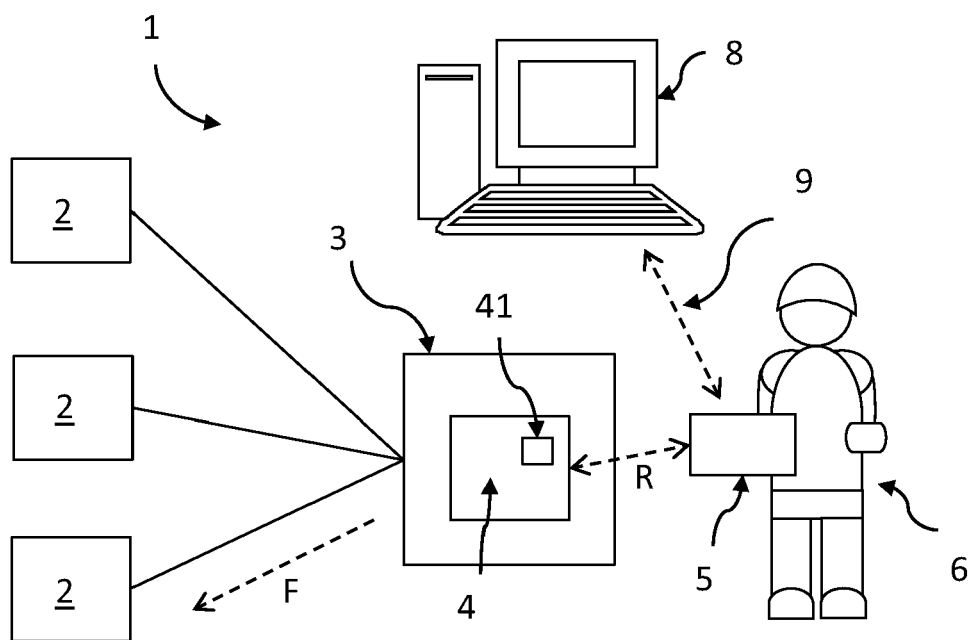


Fig.1

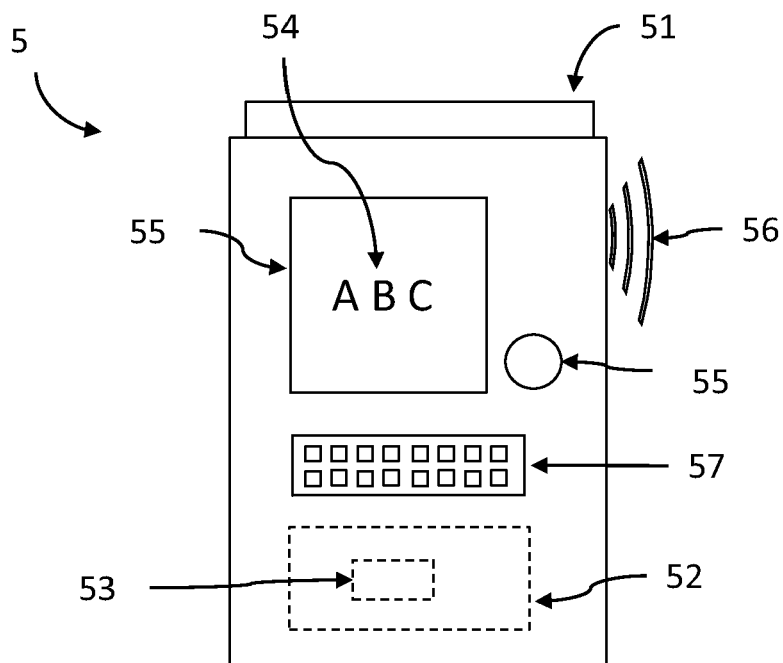


Fig.2

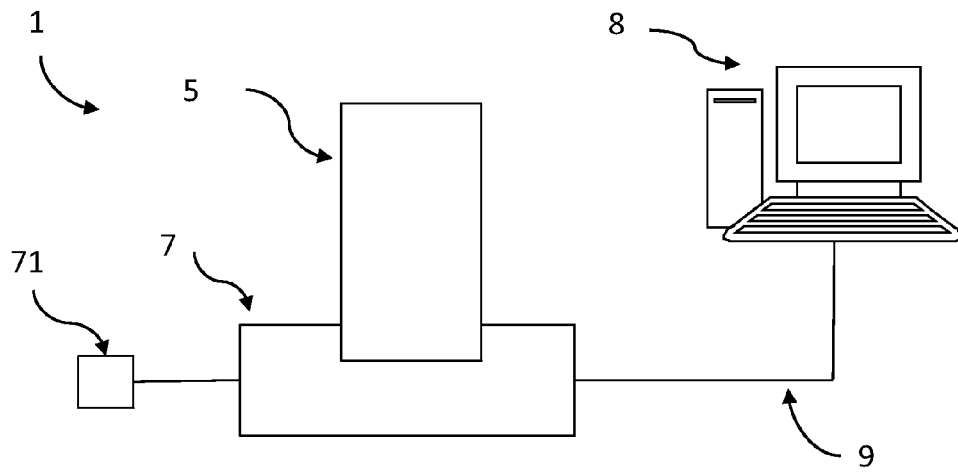


Fig.3

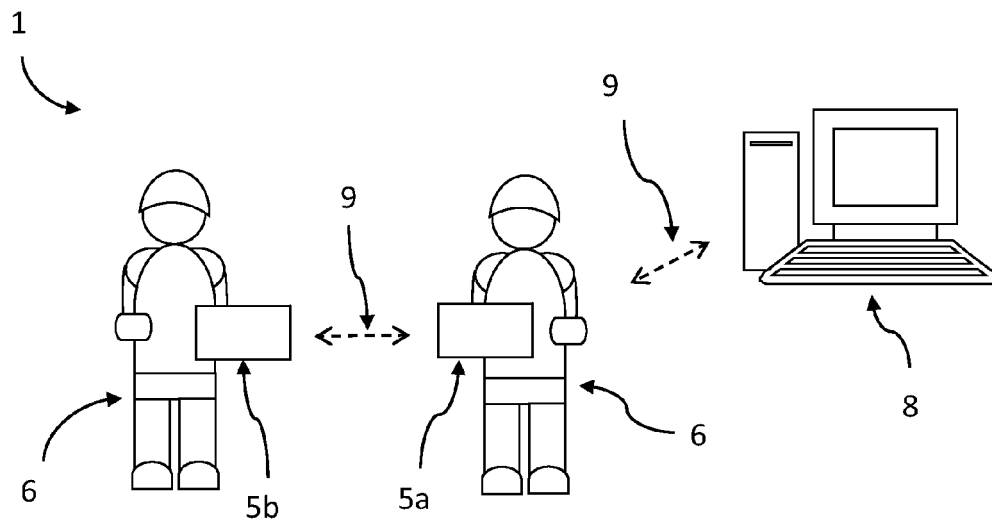


Fig.4

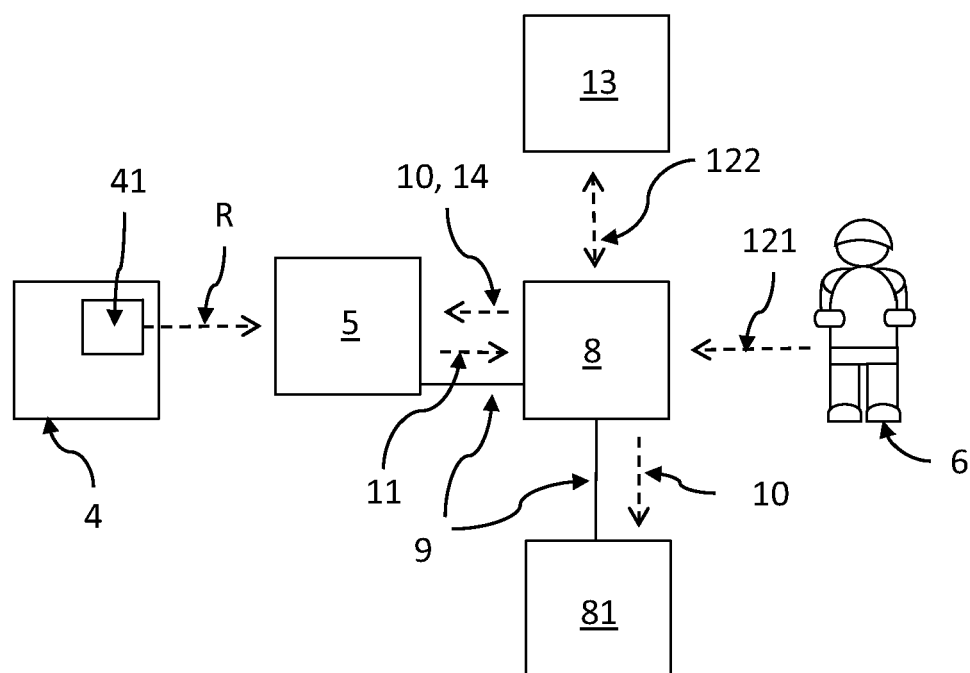


Fig.5



EUROPEAN SEARCH REPORT

Application Number
EP 09 17 9953

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2001/052544 A1 (NISHITANI HIROYUKI [JP] ET AL) 20 December 2001 (2001-12-20) * paragraph [0029] - paragraph [0042]; figures 1, 4 * -----	1-16	INV. B07C7/00
			TECHNICAL FIELDS SEARCHED (IPC)
			B07C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 26 April 2010	Examiner Wich, Roland
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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EP 09 17 9953

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26-04-2010

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		JP 2001233410 A	28-08-2001

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82