

(19)



(11)

EP 2 240 911 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:

11.03.2015 Bulletin 2015/11

(51) Int Cl.:

G07C 9/00 (2006.01)

G06K 19/077 (2006.01)

(86) International application number:

PCT/GB2009/050003

(21) Application number: **09700176.2**

(22) Date of filing: **05.01.2009**

(87) International publication number:

WO 2009/087412 (16.07.2009 Gazette 2009/29)

(54) **STOCK CONTROL PORTAL**

BESTANDSKONTROLLPORTAL

PORTIQUE DE CONTRÔLE DE STOCK

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO SE SI SK TR**

(30) Priority: **05.01.2008 GB 0800184**

(43) Date of publication of application:

20.10.2010 Bulletin 2010/42

(73) Proprietor: **TBOX LIMITED**

Newton Aycliffe

Durham

DL5 4RQ (GB)

(72) Inventor: **ELWELL, Jon**

Peterlee

Tyne And Wear SR8 2RJ (GB)

(74) Representative: **Olbrich, Thomas et al**

Murgitroyd & Company

Scotland House

165-169 Scotland Street

Glasgow G5 8PL (GB)

(56) References cited:

WO-A1-96/36186

WO-A2-01/65478

US-A1- 2005 055 582

US-A1- 2006 071 791

US-B1- 6 195 006

EP 2 240 911 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] The present invention relates to stock control and also access control to an item storage area, such as a parts or consumables store.

[0002] RFID (Radio Frequency Identification) portals are used for reading RFID tags attached to items passing through the portal. RFID portals can therefore be used in stock control applications to track the movement of inventory such as parts and consumables into and out of a storage area (known as a store or stores). RFID portals can also be used to track the movement of human users through the portal if they carry an RFID tag.

[0003] Access control barriers, such as ticket barriers and security gates, require a user to present some form of identification including perhaps biometric data such as a finger print scan, before they are allowed through the barrier.

[0004] One problem with the known RFID portals in stores applications is that they do not collect information about both items and users passing through the portal. This results in poor stock control, because unauthorised users can take items out of the stores unless access control is provided separately from the RFID scanning of items, for example by staffing the stores or providing a security check external to the portal, for example at the entrance to the building in which the stores are located.

[0005] WO96/36186 discloses a data processing system that automatically maintains records of respective locations of a plurality of objects in real time. Here, each of the objects has a respective marker that transmits an identification signal that is unique to the respective object.

[0006] It is an object of the present invention to provide improved stock control and access control to an item storage area.

Statement of Invention

[0007] According to a first aspect of the present invention there is provided a portal for stock control and access control to an item storage area, the portal comprising:

a user identifier reader operable to read a user identifier;
 an access control means for controlling user access through the portal using the read user identifier; and
 an item identifier reader operable to read an item identifier from a tag passing through the portal, wherein the access control means is further operable to control user access through the portal out of the item storage area using the read item identifier and wherein the access control means comprises a door and the access control means is further operable to control user access through the portal by activating the door,
 characterised in that:

the door is arranged when closed to enclose a

scanning volume of the item identifier reader wherein when the door is closed during item scanning, attenuation of a signal of the item identifier reader by the enclosure created by the closed door and other panels of the portal minimises unwanted tag reads.

[0008] Preferably the user identifier comprises a biometric reader operable to read a biometric user identifier from the user.

[0009] Alternatively, the user identifier reader comprises a carrier reader operable to read the user identifier from a user identifier carrier.

[0010] Preferably, the user identifier carrier comprises an identity card.

[0011] Preferably, the identity card comprises a bar code.

[0012] Alternatively, the user identifier carrier comprises an RFID tag.

[0013] Preferably, the portal further comprises a storage log operable to log the read user identifier.

[0014] Preferably, the portal further comprises a video capture means for capturing video of the user tagged with the read user identifier.

[0015] Preferably, the item identifier reader is triggered to read the item identifier by the user identifier reader.

[0016] Preferably, the item identifier reader is triggered to read the item identifier by the access control means.

[0017] Preferably, the access control means comprises a door arranged when closed to enclose a scanning volume of the item identifier reader.

[0018] Preferably, the door comprises a sliding door.

[0019] Alternatively, the door comprises a rotary door.

[0020] Preferably, the item identifier reader comprises an antenna mounted on the rotary door.

[0021] Alternatively, the access control means comprises a turnstile.

[0022] Preferably, the turnstile is arranged within a scanning volume of the item identifier reader.

[0023] Preferably, the item identifier reader is triggered to read the item identifier by a user going through the turnstile.

[0024] Preferably, the access control means is operable to control user access through the portal depending on validation of the read user identifier.

[0025] Preferably, the access control means is further operable to control user access through the portal out of the item storage area using the read item identifier.

[0026] Preferably, the access control means is activated responsive to validation of the read item identifier.

[0027] Preferably, the portal further comprises an item location module operable to locate an item using the read user identifier.

[0028] Preferably the item location module further comprises an item location interface for a user to locate an item and the read user identifier is used by the item location module to permit user access to the item locator interface.

[0029] Preferably, the portal further comprises an allocation module operable to allocate the read item identifier to a cost centre or work cell using the read user identifier.

[0030] Preferably, the allocation module further comprises an allocation interface for manual allocation of the item identifier by a user and the allocation module is operable to log the user onto the allocation interface.

[0031] Preferably, the allocation module is operable to automatically allocate the item identifier to a cost centre or work cell associated with the read user identifier.

[0032] Preferably, the portal provides access control to the item storage area with the entrance and exit along the same corridor.

[0033] Preferably, the item identifier reader comprises a plurality of antennas at least some of which are adjustable.

[0034] According to a second aspect of the present invention there is provided a method of stock control and access control to an item storage area, the method comprising the steps of:

reading a user identifier;

controlling user access through a portal using the read user identifier; and

reading an item identifier from a tag passing through the portal,

wherein the step of controlling user access through the portal out of the item storage area uses the read item identifier and wherein the step of controlling user access through the portal comprises activating a door,

characterised by the method further comprising the step of closing the door to enclose a scanning volume for reading the item identifier wherein when the door is closed during item scanning, attenuation of a signal of the item identifier reader by the enclosure created by the closed door and other panels of the portal minimises unwanted tag reads.

[0035] Preferably, the step of reading a user identifier comprises reading a biometric user identifier from the user.

[0036] Preferably, the step of reading a user identifier comprises reading the user identifier from a user identifier carrier.

[0037] Preferably, the user identifier carrier comprises an identity card.

[0038] Preferably, the step of reading a user identifier comprises reading a bar code on the identity card.

[0039] Alternatively, the user identity carrier comprises an RFID tag.

[0040] Preferably, the step of reading a user identifier comprises logging the read user identifier.

[0041] Preferably, the step of reading the user identifier comprises capturing video of the user tagged with the read user identifier.

[0042] Preferably, the step of reading the item identifier

is responsive to the step of reading the user identifier.

[0043] Preferably, the step of reading an item identifier is responsive to validation of the read user identifier.

[0044] Preferably, the step of controlling user access through the portal comprises activating a door and the method further comprises the step of closing the door to enclose a scanning volume for reading the item identifier.

[0045] Preferably, the activating comprises sliding the door.

[0046] Alternatively, the activating comprises rotating the door.

[0047] Alternatively, the step of controlling user access comprises activating a turnstile.

[0048] Preferably, the step of reading an item identifier is activated responsive to a user going through the turnstile.

[0049] Preferably, the step of controlling user access through the portal depends on validation of the read user identifier.

[0050] Preferably, the step of controlling user access through the portal out of the item storage area uses the read item identifier.

[0051] Preferably, the step of controlling user access through the portal is responsive to validation of the read item identifier.

[0052] Preferably, the method further comprises the step of locating an item using the read user identifier.

[0053] Preferably, the step of locating an item comprises permitting, using the read user identifier, a user access to an interface for the user to locate the item.

[0054] Preferably, the method further comprises the step of allocating, using the read user identifier, the read item identifier to a cost centre or work cell.

[0055] Preferably, the step of allocating comprises automatically logging a user onto an interface for the manual allocation of the item identifier by the user.

[0056] Preferably, the step of allocating comprises automatically allocating the item identifier to a work cell associated with the user identifier.

Detailed Description

[0057] The present invention will now be described by way of example only with reference to the Figures in which:

Figure 1 illustrates in schematic form a portal according to a preferred embodiment of the present invention;

Figure 2 illustrates in schematic form a portal, stores area and work cells in a factory;

Figure 3 illustrates a flow chart of the method of according to a preferred embodiment of the present invention;

Figure 4 illustrates in schematic form the antenna

placement within the portal;

Figure 5 illustrates in schematic form a portal with sliding doors according to an alternative embodiment of the present invention; and

Figure 6 illustrates in schematic form a portal with rotary doors according to an alternative embodiment of the present invention.

[0058] With reference to Figure 1 the portal 2 has a proximity card reader 4 operable to read a user identifier from a user's identity card held up against the reader. Other suitable types of readers include the kind for reading different types of user identifier carriers (including swipe card readers for magnetic swipe cards and bar code readers for reading printed bar codes) and biometric readers for reading biometric user identifiers directly from the user such as finger prints and retina scans.

[0059] The control unit 6 has a processor and memory containing a storage log 8 that is used to log the read user identifiers. A video capture module includes a video camera 10 that captures video of the user and tags it with the read user identifier.

[0060] The portal 2 also has an item identifier reader which is an RFID tag reader operable to read an item identifier from an RFID tag passing through the portal. The RFID reader has four antennas 12a to 12d connected to an RFID reader controller which is an Alien Technology alr8800 module. The antennas have a multi-static topology and circular or linear polarisation. The reader support includes EPC (Electronic Product Code) Class 1 Gen 2, EPC Class 1 Gen 1, ISO 18000-6c RFID tag protocols.

[0061] The control unit runs controller software. In this embodiment the control unit has an XScale™ processor running Linux with 64 Mb of RAM, 32 Mb of flash memory, a DSP and a Field Programmable Analogue array (FPAA) for signal processing. The RFID reader is activated to read the item identifier by the proximity card reader for example when a user swipes their identity card in front of the proximity card reader the RFID reader activates in order to read the RFID tags of items being carried by the user who has identified himself. The RFID reader may also be activated by a user going through the turnstile 16.

[0062] The turnstile 16 controls user access through the portal using the user identifier that is read by the proximity card reader. The turnstile has a top LCD (Liquid Crystal Display) indicator. It is bidirectional so can be entered from both sides. It may be fail safe (the arm will drop down when powered off), or fail secure (the arm will be locked when powered off). The turnstile arm is anti-clamping, that is the arm will be unlocked if people hold the arm when passing through. The turnstile also has an anti tail-after detector so illegal invasion can be detected.

[0063] Other access control means may be used, for example a single door with an electronic lock, however the advantage of a turnstile or similar barrier, such as

double sliding doors or a rotary door, is that it only allows one person through at a time.

[0064] The turnstile, under control of the control unit, controls the user access through the portal responsive to validation of the user identifier. Validation may include for example checking the user identifier against a list of authorised users. In that case only authorised users are issued with cards with their matching user identifier. Furthermore, when the user is exiting the stores through the portal the turnstile can be used to control user access using the read RFID item identifier. For example if the user is not authorised to take certain items out of stores then activation of the turnstile can be prevented while they are carrying that item. In this way the turnstile controls user access responsive to validation of the read RFID item identifier. The validation may be performed by looking up a database which contains access rights for users with respect to parts. This may be done with a look up table or alternatively using categories for parts and a record of which categories can be accessed by which user.

[0065] The turnstile 16 is arranged within the scanning volume are of the RFID reader, which in this case is the volume defined by the arrangement of antennas 12a to 12d.

[0066] The portal provides access control to the item storage area with the entrance and exit along the same corridor 18. Alternative arrangements include a long corridor with a separate RFID reader and identity card reader and turnstile at different locations along the corridor. Furthermore there may be separate entrance and exit corridors and the access control may be provided by for example by an activatable turnstile on the entrance corridor, with the exit corridor having the RFID reader and a dumb one-way turnstile which serves only to activate the RFID reader. However such an arrangement could result in confusion of the identity of more than one user who enters the area at the same time. Therefore it is advantageous to read the user's identity when they exit the stores as well as when they enter the stores. If however it is known that there is only one user in the stores then the computer system can indicate to the user that no reading of the user identity is required upon exit.

[0067] A portal 2 is shown in a fence 20 around the perimeter of a stores area 22 which is used for storing items 24. A fire exit 26 can provide an alternative exit from the stores area but in normal use the only entrance and exit is through the portal 2.

[0068] The portal further comprises a computer terminal which displays an item location interface 28. After a user has entered the stores area they use the item location interface to find an item. The user identifier that has been read by the proximity card is used to permit the user access to the item locator interface by logging them in automatically. An integrated system which has a record of the current work activities of the user may present the user with an indication immediately of where to find the part that they are currently working with or that they have

been instructed by another computer screen elsewhere in the factory to go and find. In this embodiment the portal control unit has a processor which runs the software that displays the item location interface. However, this module of the portal could be distributed on a different computer system separate from the control unit.

[0069] Upon exit from the stores area the user has access to an allocation module 30 using a computer terminal which is operable to allocate the read RFID item identifier to a cost centre and/or work cell 32 using the read RFID identifier. The user may be logged on to the allocation interface automatically by the allocation module for manual allocation of the item identifier by the user. When the user does not make any entry into the terminal then the allocation module is operable to automatically allocate the RFID item identifier to a cost centre and/or work cell associated with the user. The allocation module may be a software module running in the control unit alternatively running on a separate computer system perhaps in the terminal or in a central server.

[0070] With reference to Figure 3, a flow chart of the use of the portal and the method of stock control and access control is shown. The user walks through the portal 34 and presents their clock/proximity card against the turnstile entry reader 36. Alternatively, the user entering or wishing to gain access to the pod may have on his person a standard RFID tag encoded with his/her details (clock number, department or other personal data) that when scanned by a RFID tag proximity reader, or entry through the pod, will allow access through the turnstile on entry or exit.

[0071] At this stage the access entry is video tagged 38 and the user entry access is logged 40. If the user identity credentials are recognised 42 then the turnstile activates 44; if the credentials not recognised then the turnstile does not activate and the condition is logged 40.

[0072] The user then enters the main stores area 46 and may access the internal stores parts location interface 48. The user searches for parts locations 50. If the user fails to locate parts 52 they can leave the stores area immediately. The user may find the part directly. Alternatively, the user may allocate parts to a picking list 56 and print the picking list 58 before retrieving the parts 60. Parts removed from RFID control packaging will be added to an exceptions report and invoiced at month end 62. Parts that have been launched out of stores, e.g. thrown or passed through the exit, will be logged against the user/users present in the stores at the time of the parts' exit 64.

[0073] The user then approaches the stores exit 66. The user presents the clock/proximity card against the turnstile exit reader 68. The turnstile activates 70 and the access exit is video captured and tagged with the user identity 72. Also at this point the user exit access is logged 74.

[0074] There are various ways in which the turnstile may be activated, for example:

1. User swipes card, swipe triggers RFID reader to read the RFID tag, turnstile is activated.

2. User swipes card, swipe activates turnstile, use of turnstile triggers RFID reader to read the RFID tag.

3. RFID reader detects and reads RFID tag, then user swipes card, turnstile is activated.

4. RFID reader detects and reads RFID tag, then user ID is read from a user RFID tag/card, turnstile is activated.

5. Upon exit the turnstile is activated either using user ID alone or using user ID and item ID read from the RFID tag (i.e. the user is only allowed out with permitted items).

[0075] The user is logged automatically onto the parts allocation interface 76. The user then walks through the portal out of the stores area 78. The user approaches the stores part allocation interface 80 and confirms the parts withdrawal 82. The user selects parts and allocates to a cost centre or work area 84. The user may also allocate parts to cells or work areas 86. Finally the user exits the area 88 and unallocated parts default to the user's own cost centre and/or work area 90.

[0076] With reference to Figure 4, the portal 2 is shown with the location of the four antennas 12a to 12d, showing the magnetic field during scanning. The lower antennas are adjustable.

[0077] In an alternative embodiment of the present invention, the portal has sliding doors for access control.

[0078] The physical dimensions and design of the portal function to contain or enclose the radio wave form generated by the RFID transmitter. The materials used, such as 1.2mm mild steel also assist this process whilst still complying with the health and safety guidelines for safe use of the RFID hardware.

[0079] This embodiment uses a sliding mechanical door mechanism as access control means. It restricts access through the portal by closing and allows access through the portal by opening. When the doors are closed during item scanning, the attenuation of the signal from the antennas by the enclosure created by the closed door and the other panels of the portal minimises signal leakage or unwanted tag reads. This provides the advantage that when other users are near the portal, for example in a queue, then the tags that they are carrying are not inadvertently read by the antennas.

[0080] This embodiment uses a two or four antenna configuration. The antennas are mounted on adjustable base plates, to give optimum coverage of the scanning volume and to allow adjustments to be made to the angle of the antenna that alters the characteristic radio wave form generated and range of the tag recognition. The antennas may be mounted on free rotating gimbals that allow full 360 degree rotation and adjustment. In conjunc-

tion with the field strength attenuation provided by the sliding doors when closed, the portal can give full coverage to the tag reading volume.

[0081] With reference to Figures 5a to 5c, an example of the use of this sliding door embodiment is as follows:

1. The user places an access card/fob against the entry access reader.
2. The rear door 90 slides open while the front door 92 remains closed (Figure 5a).
3. The user enters the portal through the rear door frame then the door closes (Figure 5b). This defines an enclosed scanning volume bounded by closed doors 90, 92 and panels 94, 96 as well as the floor and ceiling panels.
4. Once both doors are shut the RFID scanner activates and reads the tags using the antennas 98 (Figure 5b).
5. Once tagged parts are captured the front door activates and the user exits (Figure 5c).
6. The user then allocates the parts and deposits the header card containing the RFID tag into a recycle bin.

[0082] The sliding doors utilise a lever and pulley mechanism driven by an electric motor to independently open each door in turn. In addition the mechanism is on a camber to allow the doors to retract immediately in case of a fire or when power is withdrawn from the system.

[0083] In a further embodiment of the present invention, the portal has rotating doors for access control.

[0084] This has the same principle of operation and advantages as the sliding door embodiment, but uses a rotating cylindrical door mechanism that restricts access to the control area and minimises signal leakage or unwanted tag reads.

[0085] With reference to Figures 6a to 6c, example process of the use of this rotating door embodiment is as follows:

1. The user places an access card/fob against the entry access reader.
2. The cylindrical gateway 100 turns into the entry position (Figure 6a).
3. The user enters the Rotary pod.
4. Proximity detectors in the ceiling detect user entry past the entry threshold and rotate the cylindrical gateway so as to close both doors (Figure 6b). This defines an enclosed scanning volume bounded by closed cylindrical gateway (rotating door) 100 and panels 102, 104 as well as the floor and ceiling panels.
5. When fully closed the RFID reader activates and reads the tags using the antennas 106 (Figure 6b).
6. The cylindrical gateway then rotates to allow the user to exit (Figure 6c).
7. The user then allocates the parts and deposits the header card containing the RFID tag into a recycle

bin.

[0086] This rotating door embodiment can be constructed using mild steel, for example of 1.2mm thickness. It utilises an electric motor to rotate the cylindrical gateway, the rotation is forward then backward (e.g. clockwise then anticlockwise). This enables the antennas to be attached to the gateway without twisting their connecting cables. In addition the mechanism incorporates a passive sprung mechanism to allow the cylindrical gateway to spin immediately open in case of a fire or when power is withdrawn from the system. The use of two diametrically opposed entrance/exit slots in the cylinder of the rotating door allows such a failsafe open position.

[0087] Further modifications and improvements may be added without departing from the scope of the attached claims.

Claims

1. A portal for stock control and access control to an item storage area, the portal (2) comprising:

a user identifier reader (4) operable to read a user identifier; an access control means (6) for controlling user access through the portal (2) using the read user identifier; and
an item identifier reader (12a-12d) operable to read an item identifier from a tag passing through the portal (2),

wherein the access control means (6) is further operable to control user access through the portal (2) out of the item storage area (8) using the read item identifier and wherein the access control means (6) comprises a door and the access control means (6) is further operable to control user access through the portal (2) by activating the door,

characterised in that:

the door is arranged when closed to enclose a scanning volume of the item identifier reader (12a-12d) wherein when the door is closed during item scanning, attenuation of a signal of the item identifier reader (12a-12d) by the enclosure created by the closed door and other panels of the portal (2) minimises unwanted tag reads.

2. The portal of any previous claim, wherein the item identifier reader is triggered to read the item identifier by the user identifier reader.
3. The portal of any previous claim, wherein the door comprises a sliding door or a rotary door.
4. The portal of any previous claim, wherein the item

identifier reader is triggered to read the item identifier by the access control means.

5. The portal of any previous claim, wherein the access control means is activated responsive to validation of the read item identifier. 5
6. The portal of any previous claim, further comprising an allocation module (30) operable to allocate the read item identifier to a cost centre or work cell (32) using the read user identifier. 10
7. The portal of claim 6, wherein the allocation module further comprises an allocation interface for manual allocation of the item identifier by a user and the allocation module is operable to log the user onto the allocation interface. 15
8. The portal of claim 6, wherein the allocation module is operable to automatically allocate the item identifier to a cost centre or work cell associated with the read user identifier. 20
9. The portal of any previous claim, wherein the portal provides access control to the item storage area with the entrance and exit along the same corridor (18). 25
10. A method of stock control and access control to an item storage area, the method comprising the steps of: 30
 - reading a user identifier;
 - controlling user access through a portal (2) using the read user identifier; and
 - reading an item identifier from a tag passing through the portal 35

wherein the step of controlling user access through the portal out of the item storage area uses the read item identifier and wherein the step of controlling user access through the portal comprises activating a door, **characterised by** the method further comprising the step of closing the door to enclose a scanning volume for reading the item identifier wherein when the door is closed during item scanning, attenuation of a signal of the item identifier reader by the enclosure created by the closed door and other panels of the portal minimises unwanted tag reads. 40 45
11. The method of claim 10, wherein the activating comprises sliding or rotating the door. 50
12. The method of any of claims 10 or 11, wherein the step of controlling user access through the portal is responsive to validation of the read item identifier. 55
13. The method of any of claims 10 to 12, further comprising the step of allocating, using the read user

identifier, the read item identifier to a cost centre or work cell.

14. The method of claim 13, wherein the step of allocating comprises automatically logging a user onto an interface for the manual allocation of the item identifier by the user.
15. The method of claim 13, wherein the step of allocating comprises automatically allocating the item identifier to a cost centre or work cell associated with the user identifier.

15 Patentansprüche

1. Ein Portal zur Bestandskontrolle und Zugangskontrolle zu einem Artikellagerbereich, wobei das Portal (2) Folgendes beinhaltet:

ein Benutzerkennungslesegerät (4), das betriebsbereit ist, um eine Benutzerkennung zu lesen;

ein Zugangskontrollmittel (6) zum Kontrollieren von Benutzerzugang durch das Portal (2) unter Verwendung der Lesebenutzerkennung; und
ein Artikelkennungslesegerät (12a-12d), das betriebsbereit ist, eine Artikelkennung von einem durch das Portal (2) gehenden Kennzeichen zu lesen,

wobei das Zugangskontrollmittel (6) ferner betriebsbereit ist, um Benutzerzugang durch das Portal (2) aus dem Artikellagerbereich (8) heraus unter Verwendung der Leseartikelkennung zu kontrollieren, und wobei das Zugangskontrollmittel (6) eine Tür beinhaltet und das Zugangskontrollmittel (6) ferner betriebsbereit ist, um Benutzerzugang durch das Portal (2) durch Aktivieren der Tür zu kontrollieren,

dadurch gekennzeichnet, dass:

die Tür angeordnet ist, um, wenn geschlossen, ein Abtastvolumen des Artikelkennungslesegeräts (12a-12d) zu umschließen, wobei, wenn die Tür während des Artikelabtastens geschlossen ist, Abschwächung eines Signals des Artikelkennungslesegeräts (12a-12d) durch die durch die geschlossene Tür und andere Elemente des Portals (2) geschaffene Umschließung ungewollte Kennzeichenlesungen minimiert.

2. Portal gemäß einem vorhergehenden Anspruch, wobei das Artikelkennungslesegerät durch das Benutzerkennungslesegerät ausgelöst wird, die Artikelkennung zu lesen.

3. Portal gemäß einem vorhergehenden Anspruch, wobei die Tür eine Schiebetür oder eine Drehtür beinhaltet.
4. Portal gemäß einem vorhergehenden Anspruch, wobei das Artikelkennungslesegerät durch das Zugangskontrollmittel ausgelöst wird, die Artikelkennung zu lesen. 5
5. Portal gemäß einem vorhergehenden Anspruch, wobei das Zugangskontrollmittel als Reaktion auf Validierung der Leseartikelkennung aktiviert wird. 10
6. Portal gemäß einem vorhergehenden Anspruch, ferner beinhaltend ein Zuteilungsmodul (30), das betriebsbereit ist, um die Leseartikelkennung einer Kostenstelle oder einer Arbeitszelle (32) unter Verwendung der Lesebenutzerkennung zuzuteilen. 15
7. Portal gemäß Anspruch 6, wobei das Zuteilungsmodul ferner eine Zuteilungsschnittstelle zur manuellen Zuteilung der Artikelkennung durch einen Benutzer beinhaltet und das Zuteilungsmodul betriebsbereit ist, den Benutzer für die Zuteilungsschnittstelle zu registrieren. 20 25
8. Portal gemäß Anspruch 6, wobei das Zuteilungsmodul betriebsbereit ist, um die Artikelkennung automatisch einem einer Kostenstelle oder Arbeitszelle zugehörigen Lesebenutzerkennwort zuzuteilen. 30
9. Portal gemäß einem der vorhergehenden Ansprüche, wobei das Portal Zugangskontrolle zu dem Artikellagerbereich mit dem Eingang und Ausgang entlang dem gleichen Korridor (18) bereitstellt. 35
10. Ein Verfahren zur Bestandskontrolle und Zugangskontrolle zu einem Artikellagerbereich, wobei das Verfahren die folgenden Schritte beinhaltet: 40 45 50 55
- Lesen einer Benutzerkennung;
Kontrollieren von Benutzerzugang durch ein Portal (2) unter Verwendung der Lesebenutzerkennung; und
Lesen einer Artikelkennung von einem durch das Portal gehenden Kennzeichen, wobei der Schritt des Kontrollierens von Benutzerzugang durch das Portal aus dem Artikellagerbereich heraus die Leseartikelkennung verwendet und wobei der Schritt des Kontrollierens von Benutzerzugang durch das Portal das Aktivieren einer Tür beinhaltet,
dadurch gekennzeichnet, dass das Verfahren ferner den Schritt des Schließens der Tür, um ein Abtastvolumen zum Lesen der Artikelkennung zu umschließen, beinhaltet, wobei, wenn die Tür während des Artikelabtastens geschlossen ist, Abschwächung eines Signals des Artikelkennungslesegeräts durch die durch die geschlossene Tür und andere Elemente des Portals geschaffene Umschließung ungewollte Kennzeichenlesungen minimiert.
11. Verfahren gemäß Anspruch 10, wobei das Aktivieren Schieben oder Drehen der Tür beinhaltet.
12. Verfahren gemäß einem der Ansprüche 10 oder 11, wobei der Schritt des Kontrollierens von Benutzerzugang durch das Portal auf Validierung der Leseartikelkennung reagiert.
13. Verfahren gemäß einem der Ansprüche 10 bis 12, ferner beinhaltend den Schritt des Zuteilens, unter Verwendung der Lesebenutzerkennung, der Leseartikelkennung an eine Kostenstelle oder eine Arbeitszelle.
14. Verfahren gemäß Anspruch 13, wobei der Schritt des Zuteilens das automatische Registrieren eines Benutzers für eine Schnittstelle für die manuelle Zuteilung der Artikelkennung durch den Benutzer beinhaltet.
15. Verfahren gemäß Anspruch 13, wobei der Schritt des Zuteilens das automatische Zuteilen der Artikelkennung einem einer Kostenstelle oder Arbeitsstelle zugehörigen Benutzerkennwort beinhaltet.

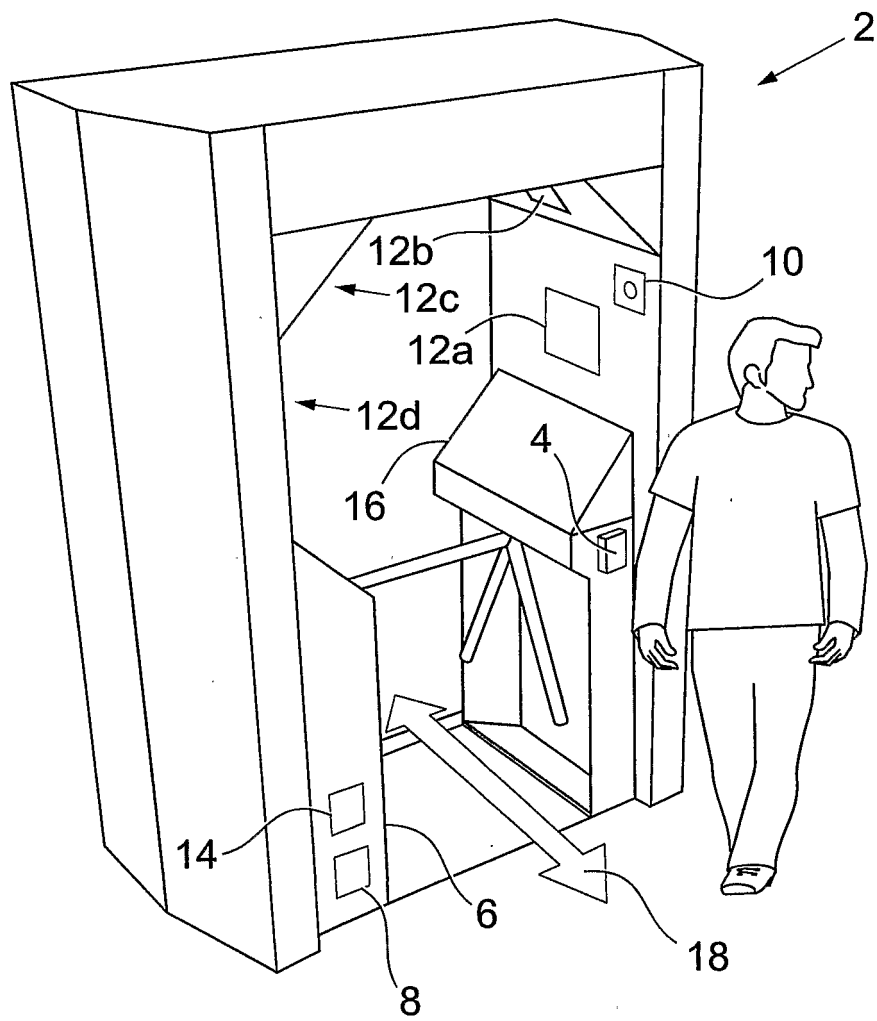
Revendications

1. Un portique destiné au contrôle de stock et au contrôle d'accès à une zone de stockage d'articles, le portique (2) comprenant :

un lecteur d'identificateur d'utilisateur (4) opérationnel pour lire un identificateur d'utilisateur ;
un moyen de contrôle d'accès (6) destiné à contrôler l'accès des utilisateurs par le portique (2) en utilisant l'identificateur d'utilisateur lu ; et
un lecteur d'identificateur d'article (12a à 12d) opérationnel pour lire un identificateur d'article à partir d'une étiquette passant par le portique (2),
où le moyen de contrôle d'accès (6) est en sus opérationnel pour contrôler l'accès des utilisateurs par le portique (2) hors de la zone de stockage d'articles (8) en utilisant l'identificateur d'article lu et où le moyen de contrôle d'accès (6) comprend une porte et le moyen de contrôle d'accès (6) est en sus opérationnel pour contrôler l'accès des utilisateurs par le portique (2) grâce à l'activation de la porte,
caractérisé en ce que :

la porte est arrangée lorsque fermée afin de

- renfermer un volume de scannage du lecteur d'identificateur d'article (12a à 12d) où lorsque la porte est fermée durant le scannage de l'article, l'atténuation d'un signal du lecteur d'identificateur d'article (12a à 12d) par l'enceinte créée par la porte fermée et d'autres panneaux du portique (2) minimise les lectures d'étiquettes non désirées. 5
2. Le portique de n'importe quelle revendication précédente, où la lecture de l'identificateur d'article par le lecteur d'identificateur d'article est déclenchée par le lecteur d'identificateur d'utilisateur. 10
3. Le portique de n'importe quelle revendication précédente, où la porte comprend une porte coulissante ou une porte rotative. 15
4. Le portique de n'importe quelle revendication précédente, où la lecture de l'identificateur d'article par le lecteur d'identificateur d'article est déclenchée par le moyen de contrôle d'accès. 20
5. Le portique de n'importe quelle revendication précédente, où le moyen de contrôle d'accès est activé en réponse à la validation de l'identificateur d'article lu. 25
6. Le portique de n'importe quelle revendication précédente, comprenant en sus un module d'affectation (30) opérationnel pour affecter l'identificateur d'article lu à un centre de coût ou une cellule de travail (32) en utilisant l'identificateur d'utilisateur lu. 30
7. Le portique de la revendication 6, où le module d'affectation comprend en sus une interface d'affectation pour l'affectation manuelle de l'identificateur d'article par un utilisateur et le module d'affectation est opérationnel pour enregistrer l'utilisateur sur l'interface d'affectation. 35
8. Le portique de la revendication 6, où le module d'affectation est opérationnel pour affecter automatiquement l'identificateur d'article à un centre de coût ou une cellule de travail associé(e) à l'identificateur d'utilisateur lu. 40
9. Le portique de n'importe quelle revendication précédente, le portique fournissant un contrôle d'accès à la zone de stockage d'articles, l'entrée et la sortie se faisant suivant le même couloir (18). 45
10. Une méthode de contrôle de stock et de contrôle d'accès à une zone de stockage d'articles, la méthode comprenant les étapes consistant à : 50
- lire un identificateur d'utilisateur ;
contrôler l'accès des utilisateurs par un portique
- (2) en utilisant l'identificateur d'utilisateur lu ; et lire un identificateur d'article à partir d'une étiquette passant par le portique, où l'étape consistant à contrôler l'accès des utilisateurs par le portique hors de la zone de stockage d'articles utilise l'identificateur d'article lu et où l'étape consistant à contrôler l'accès des utilisateurs par le portique comprend l'activation d'une porte, **caractérisée par le fait que** la méthode comprend en sus l'étape consistant à fermer la porte afin de renfermer un volume de scannage pour la lecture de l'identificateur d'article où lorsque la porte est fermée durant le scannage de l'article, l'atténuation d'un signal du lecteur d'identificateur d'article par l'enceinte créée par la porte fermée et d'autres panneaux du portique minimise les lectures d'étiquettes non désirées.
11. La méthode de la revendication 10, où l'activation comprend le fait de faire coulisser ou de faire tourner la porte.
12. La méthode de n'importe lesquelles des revendications 10 ou 11, où l'étape consistant à contrôler l'accès des utilisateurs par le portique se fait en réponse à la validation de l'identificateur d'article lu.
13. La méthode de n'importe lesquelles des revendications 10 à 12, comprenant en sus l'étape consistant à affecter, en utilisant l'identificateur d'utilisateur lu, l'identificateur d'article lu à un centre de coût ou une cellule de travail.
14. La méthode de la revendication 13, où l'étape d'affectation comprend le fait d'enregistrer automatiquement un utilisateur sur une interface pour l'affectation manuelle de l'identificateur d'article par l'utilisateur.
15. La méthode de la revendication 13, où l'étape d'affectation comprend le fait d'affecter automatiquement l'identificateur d'article à un centre de coût ou une cellule de travail associé(e) à l'identificateur d'utilisateur.



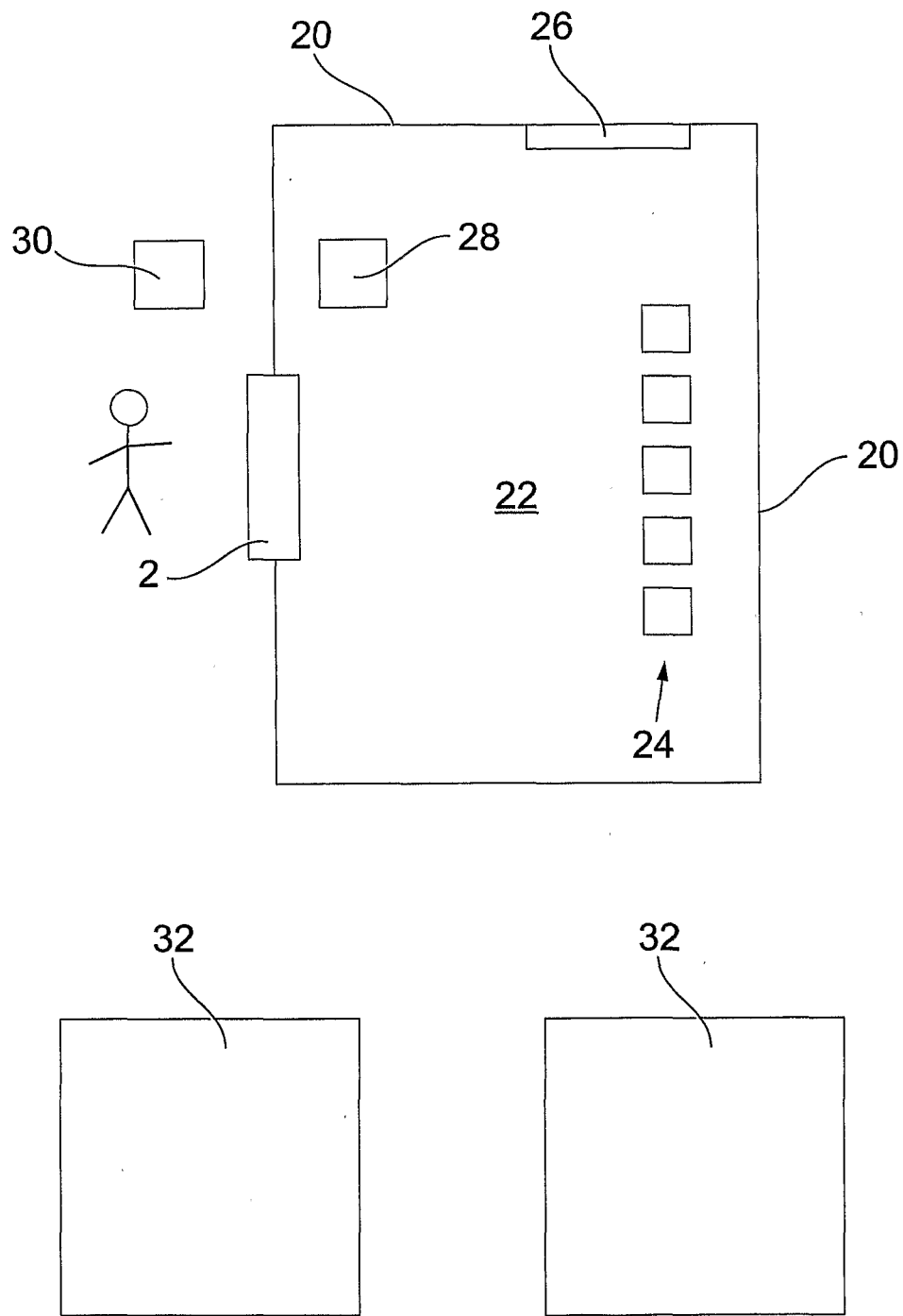
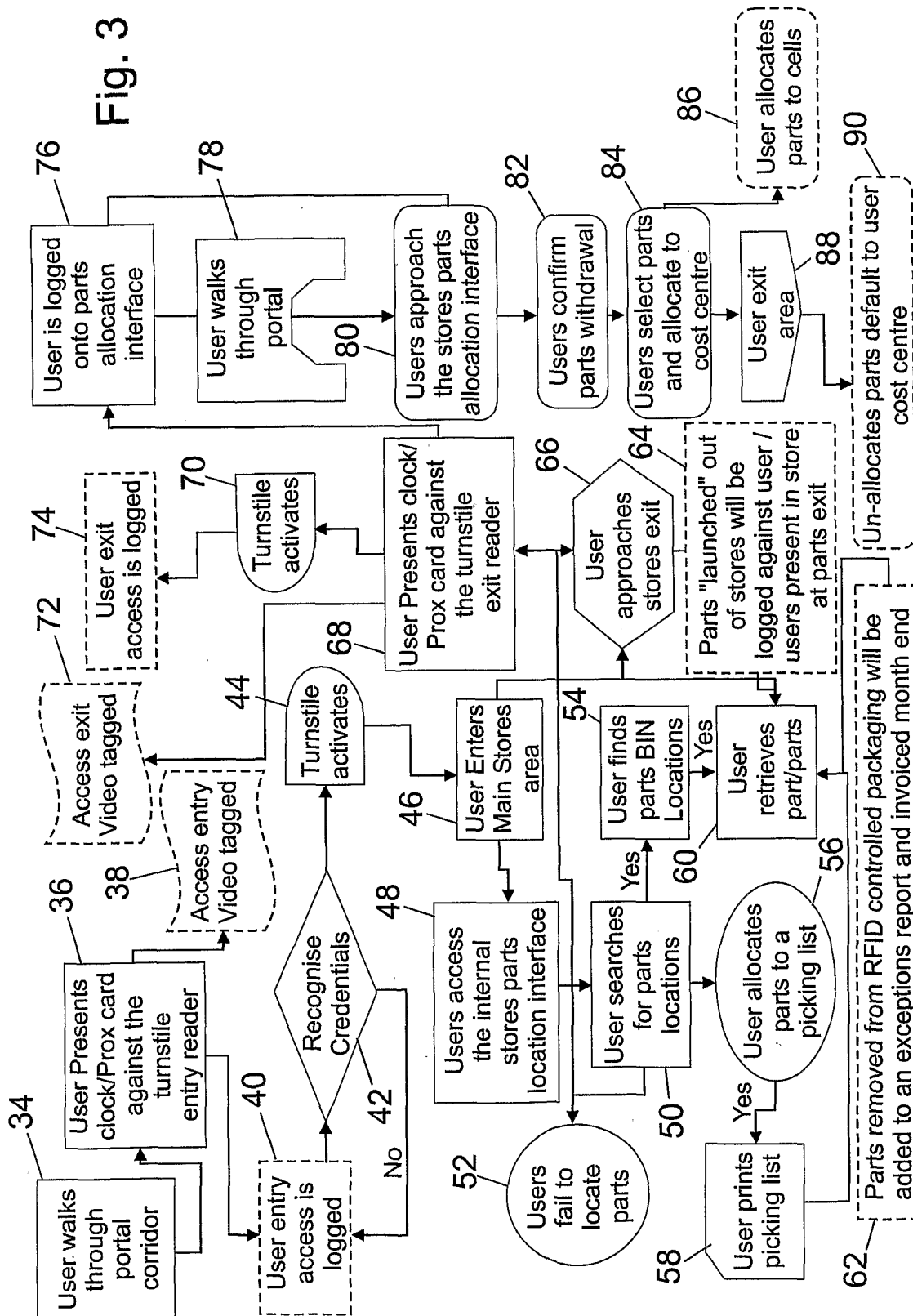


Fig. 2



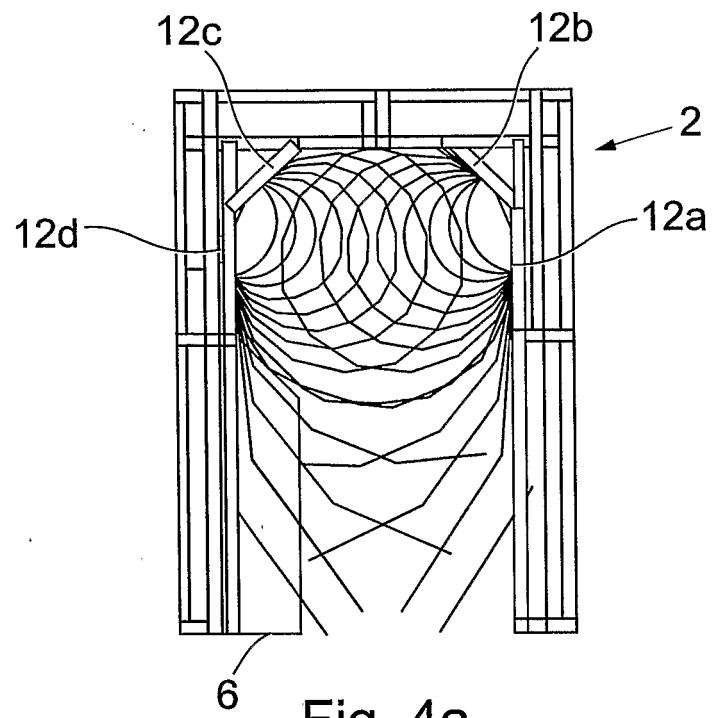


Fig. 4a

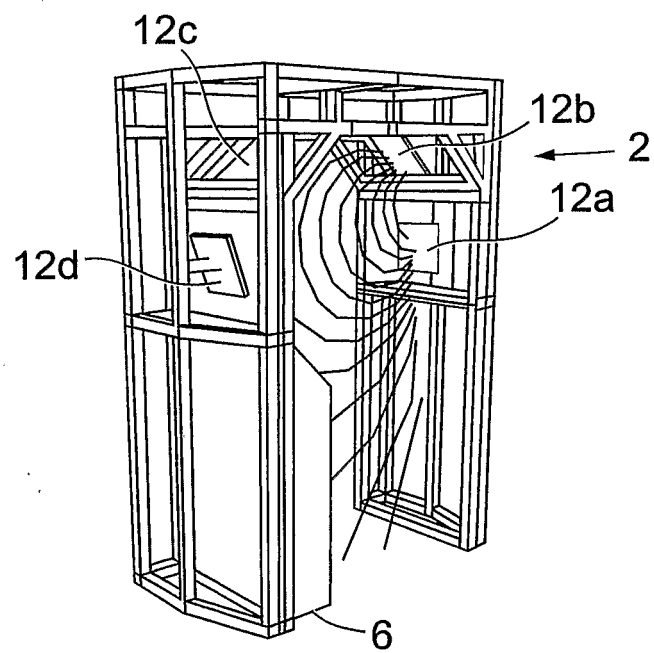


Fig. 4b

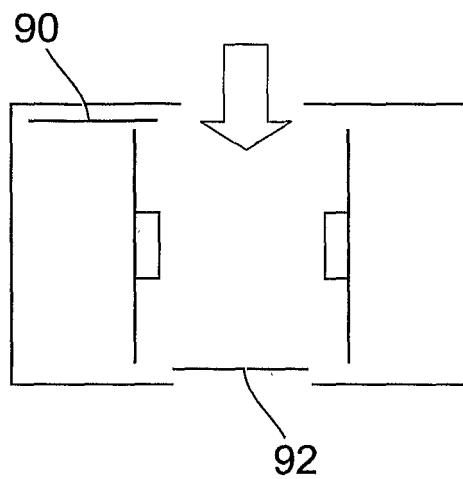


Fig. 5a

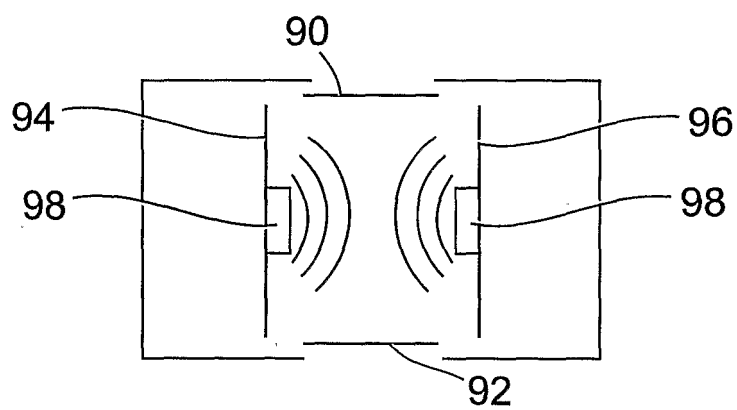


Fig. 5b

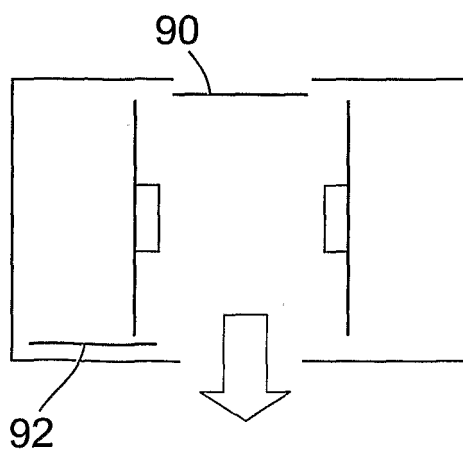


Fig. 5c

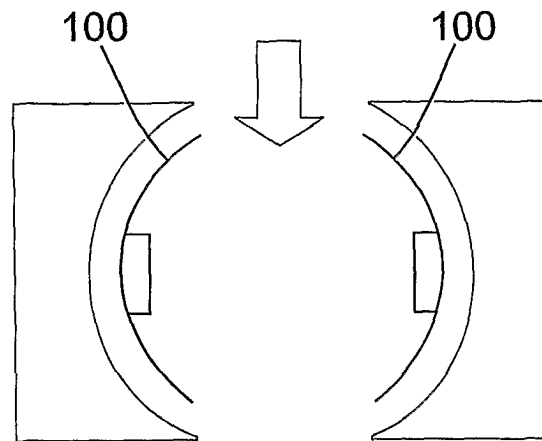


Fig. 6a

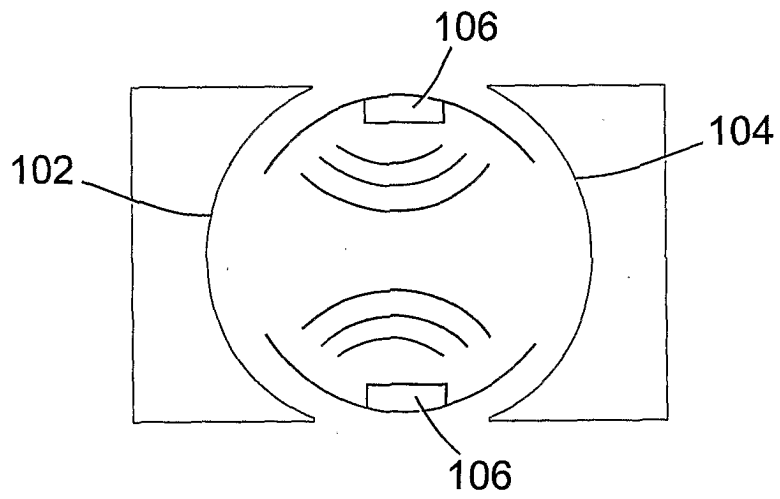


Fig. 6b

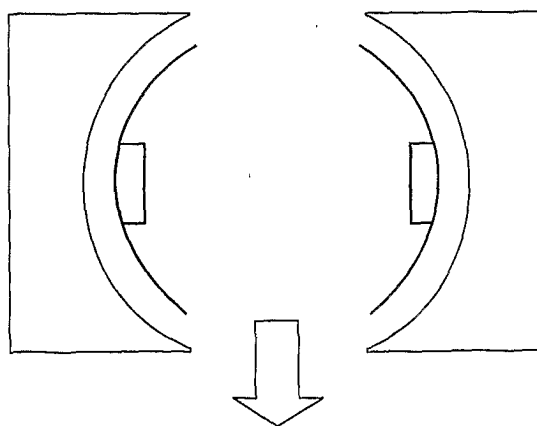


Fig. 6c

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- WO 9636186 A [0005]