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(54) Method for delivering valuable objects or the like to a client and apparatus for carrying out such a method

(57) In order to have valuable object or the like delivered to clients, the client can order a valuable object from a supplier via a communication link, and said supplier makes the ordered valuable object available to the client. An ordered valuable object is provided with an object identification that can be machine-read, which identification is linked to a client identification, wherein the object identification and the client identification are registered in a data file. Ordered valuable objects are placed in at least one device for delivering valuable objects, wherein the data file is stored in a memory of a control unit of the device. The device includes a control panel for the client as well as client identification means. An ordered valuable object can be dispensed by the device, once a client has been identified, under the control of a user interface programme. A device that is suitable for carrying out this method comprises a safe for storing said valuable objects, a control panel for the client, a delivering system for delivering valuable objects to the client, which system comprises a delivering opening outside the safe, which is accessible to the client, a control unit and a display for communication with the client. The safe includes a number of compartments for containers in which valuable objects are packed, wherein the control unit is arranged for detecting the presence of containers in the compartments. The containers are provided, at least in part, with an object identification, wherein the control unit comprises a memory, in which a data file containing object identifications and client identifications linked therewith can be stored. The control unit is arranged for signalling to a client upon identification of said client that a container that is intended for said client is present in the device. The control unit is furthermore arranged for delivering said container by means of the delivering system upon operation of the control panel.

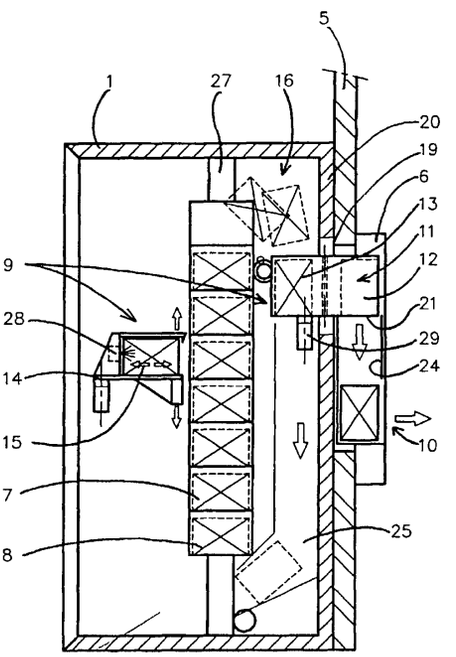

fig.1

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Description

[0001] The invention relates to a method for delivering valuable objects or the like to a client in accordance with the preamble of claim 1 and to a device for carrying out this method in accordance with the preamble of claim 7.

[0002] An example of such a device is a cash dispenser, where the client can usually withdraw a desired amount at any time of the day. A limitation of the prior art devices is the fact that these devices are only capable of dispensing money to clients. In the service industries, such as banks, there is a need to be able to deliver not only money, but also other valuable papers, such as foreign currency, travel documents, insurance policies and the like at any desired moment, also outside business hours, without the assistance of staff. Also other organisations, such as organisations that operate in the public health sector, for example pharmacies and hospitals, consider it desirable to be able to dispense valuable objects to clients at any time of the day without the assistance of staff.

[0003] The object of the invention is to provide a method and a device of the above kind, by means of which this need can be met.

[0004] In order to accomplish that objective, the method according to the invention is characterized in that an ordered valuable object is provided with an object identification that can be machine-read, which identification is linked to a client identification, wherein the object identification and the client identification are registered in a data file, wherein ordered valuable objects are placed in at least one device for delivering valuable objects, wherein the data file is stored in a memory of a control unit of the device, which device includes a control panel for the client as well as client identification means, wherein an ordered valuable object can be dispensed by the device, once a client has been identified, under the control of a user interface programme.

[0005] In this way it is possible to dispense valuable objects to persons at any time of the day/night. For example, this device makes it possible to dispense valuable objects other than Dutch currency to bank clients.

[0006] A device which is suitable for carrying out this method is according to the invention characterized in that the safe includes a number of compartments for containers in which valuable objects are packed, wherein the control unit is arranged for detecting the presence of containers in the compartments, wherein said containers are provided, at least in part, with an object identification, wherein the control unit comprises a memory, in which a data file containing object identifications and client identifications linked therewith can be stored, wherein the control unit is arranged for signalling to a client upon identification of said client that a container that is intended for said client is present in the device, wherein the control unit is furthermore arranged for delivering said container by means of the delivering system upon operation of the control panel.

[0007] The invention will now be explained in more detail with reference to the drawing, in which a few embodiments of the device according to the invention are very schematically shown.

[0008] Figure 1 is a schematic cross-sectional view of a first embodiment of the device according to the invention.

[0009] Figure 2 is a schematic front view of the device according to Figure 1, in the open position thereof.

[0010] Figure 3 is a cross-sectional view corresponding to Figure 1 of a second embodiment of the device according to the invention.

[0011] Figure 4 is a schematic view of the device of Figure 3, in the open position thereof.

[0012] Figures 5A-5D show various positions of the dispensing cylinder of the devices according to Figures 1 - 4.

[0013] Figure 6 is a very simplified block diagram of the control unit of the devices according to Figures 1 - 4.

[0014] Figure 7 is a cross-sectional view corresponding to Figure 1 of a third embodiment of the device according to the invention.

[0015] Figure 8 is a schematic view of the device of Figure 7, in the open position thereof.

[0016] Figure 9 is a cross-sectional view of the device according to Figure 7, showing the device during the delivering of a container via the return channel.

[0017] The method according to the invention will now be described by means of an implementation thereof in a device for delivering valuable objects or the like to a client, which is shown very schematically in Figures 1 and 2. It will be apparent to those skilled in the art, however, that the method disclosed herein can also be carried out with devices of different design. The device according to Figures 1 and 2 comprises a safe 1 for storing the valuable objects. The term valuable objects as used within the framework of the description and the claims is to be understood to include valuable papers, such as money, among which foreign currency, cheques, travel documents, insurance documents, etc., as well as other objects that are valuable to the person in question, such as medicines, for example. The term safe as used within the framework of the description and the claims is to be understood to include any mechanical protective structure. The device comprises a control unit 2, which is only shown in the block diagram according to Figure 6, wherein a control panel 3 for the client and a display 4 for communication with the client are connected to said control unit 6. The client can operate the device by means of the control panel 3 and the display 4 under the control of a suitable user interface programme. Such a user interface programme usually communicates with the client through menus.

[0018] According to Figure 1, the safe 1 is disposed inside a bank building, for example, one wall 5 of which is schematically indicated, whereby a part 6 of the device is mounted on the outside of the wall 5. Said part 6 accommodates the control panel 3 and the display 4.

[0019] In the embodiment that is shown in Figures 1 and 2, a number of compartments 7 is fixedly mounted in safe 1, into which compartments rectangular containers 8 can be placed, in which predetermined valuable objects are packed. Each compartment 7 may be fitted with a spring clamp or the like, which retains a container 8 that has been slid into the compartment. Safe 1 furthermore accommodates a delivering system 9 for the delivering of valuable objects to the client, which delivering system includes a delivering opening 10, which is present in the part 6 outside safe 1 and which is accessible to the client. The control unit 2 is arranged for operating the delivering system 9 in dependence on selections made by the client via the control panel 3.

[0020] Delivering system 9 comprises dispensing means 11, by means of which a container 8 from safe 1 can be supplied to the delivering opening 10. In the present embodiment said dispensing means 11 is in the form of a dispensing cylinder 12. Dispensing cylinder 12 includes a dispensing compartment 13, which is made up of a slot that has been formed in the massive dispensing cylinder 12. In the present embodiment slot 13 continues in axial direction throughout dispensing cylinder 12, so that dispensing compartment 13 is open both on the upper side and on the bottom side.

[0021] Delivering system 9 furthermore includes transfer means, which, in the embodiment according to Figures 1 and 2, comprise a carriage 14 that is movable in x-direction and y-direction with respect to compartments 7, said carriage comprising a transfer element 15, by means of which a desired container 8 can be removed from a compartment 7 and be transferred on the upper side of the safe to dispensing compartment 13 of dispensing cylinder 12. As is schematically indicated, a suitable tilting mechanism 16 connected to control unit 2 is mounted at the upper side of safe 1, which tilting mechanism supplies the rectangular container 8 with a short side to the open upper side of dispensing compartment 13.

[0022] Dispensing cylinder 12 is shown on a larger scale in different positions in Figures 5A-5D. Dispensing cylinder 12 is rotatable about an axis of rotation 17 in a frame 18, which is mounted in a suitable opening 19 in the rear wall 20 of safe 1. As is apparent from Figure 5, frame 18 encloses the dispensing cylinder 12, with frame 18 having an opening on the inside and on the outside of safe 1 whose area is smaller than the largest diameter of dispensing cylinder 12, so that it is not possible to remove the dispensing cylinder from the frame. A return opening 22 and a delivering opening 23 are formed in a bottom plate 21 of frame 18, whose function will be explained in more detail yet hereafter.

[0023] Figure 5A shows the dispensing cylinder in a receiving position, in which position the transfer element 15 can place a container 8 into dispensing compartment 13 via tilting mechanism 16. Figure 5B shows the dispensing cylinder 12 in a waiting position, in which the dispensing compartment 13 is positioned just inside safe 1 and container 8 is retained in dispensing compartment 13. Figure 5C shows the dispensing cylinder 12 in a delivering position, in which position dispensing compartment 13 is in line with the delivering opening 10, so that container 8 is delivered to the delivering opening 10. When a container 8 has been supplied to delivering opening 10, control unit 2 will operate a door 24, so that the client can remove container 8 from the delivering opening. Figure 5D shows the dispensing cylinder 12 in a return position, in which the dispensing compartment 13 is in line with the return opening 22, so that container 8 is delivered to a return channel 25 for receiving rejected containers 8, as will be explained in more detail yet hereafter.

[0024] Figure 2 schematically indicates that carriage 14 can be moved forward and backward in x-direction on a guide 26, which can in turn be moved forward and backward in y-direction on guides 27 disposed on either side of compartments 7. Suitable motors for moving carriage 14 are controlled by control unit 2. The transfer element 15 is capable of forward and backward movement in z-direction for the purpose of removing a container 8 from a compartment 7 and delivering it to dispensing compartment 13 via tilting mechanism 16.

[0025] Furthermore a reading unit or sensor 28 (very schematically indicated) is mounted on carriage 14 for detecting the containers 8. Sensor 28 is connected to control unit 2. Dispensing cylinder 12 can be driven by a motor 29 (schematically indicated), which is likewise operated by control unit 2.

[0026] The operation and the use of the above-described device is as follows.

[0027] Clients can order one or more valuable objects from a bank or other supplier in various manners via a communication link. This can for example be done by telephone, by means of an SMS message or via a website that can be accessed via the Internet.

[0028] At a specific location, for example in a central protected room of a bank, valuable objects, such as travel documents, insurance policies, foreign currency and the like that have been ordered by clients are packed in containers 8, wherein the container is provided with an object identification code that is unique for each container, such as a bar code or similar identification code, whereby the identification code is registered in a data file, together with a code for the client in question. Furthermore, containers 8 can be prepared, in which containers predetermined amounts of money are packed. The identification codes of said containers 8 are likewise registered in the data file, together with the associated amount. The prepared containers 8 are delivered to the various branches of the bank by a specialized service company and placed into the compartments 7 in the safe. The related data file is supplied to control unit 2 via an input unit 30. Said input unit 30 may for example consist of a floppy disc unit. It is also possible, of course, to supply the data file to the control unit 2 in a different manner, for example via a suitable data link or the like.

[0029] Once the containers 8 have been placed into the compartments 7, the safe is closed and the control unit 2 actuates the carriage 14 for scanning all containers 8, wherein the identification codes are read by means of sensor 28 and the locations of containers 8 are registered. The control unit 2 preferably compares the detected identification codes with the data file that has been received, and if differences are detected it can deliver an alarm signal, for example by printing a journal message.

[0030] When a client presents himself at the device described herein, for example by inserting his cash card into a cash card reader 31 in a usual manner and entering the pin code via control panel 3, the control unit 2 will signal to the client via the display, under the control of the user interface programme, that his order is present in the safe. It is noted that the identification of the client can also take place in a different manner, for example by means of an iris check, a fingerprint check or a voice check.

[0031] Following said identification, the client can indicate via the control panel 3 that he wishes to receive his order. In that case the control unit 2 will actuate the delivery system in such a manner that the container 8 intended for the client in question is taken out of compartment 7 and supplied to dispensing compartment 13. The control unit 2 then puts the dispensing cylinder 12 in the waiting position and asks the client via the display 4 whether he indeed wishes to receive his order. If the client confirms that he wishes to receive his order, the dispensing cylinder 12 will be turned to the delivering position and the container 8 will fall into delivering opening 10. The control unit 2 will open the door 24 and the client can take out his order.

[0032] If the client indicates that on second thoughts he does not wish to receive his order, the control unit 2 will turn the dispensing cylinder 12 to the return position and the container 8 will fall into return channel 25.

[0033] If a client presents himself to control unit 2 and he has not placed an order, he can withdraw an amount of money, if desired, if there are still containers containing predetermined amounts present in safe 1.

[0034] The control unit 2 may be arranged in such a way that containers 8 that have been present in the safe 1 longer than a predetermined period of time will automatically be discharged from the compartments 7. To this end the delivering system 9 is operated in such a manner that the containers in question are supplied to the return channel 25 via the dispensing cylinder 12. When the bank or the specialized service company comes to place new containers in safe 1, the bank or service company employee(s) in question will also take along the containers that are present in the return receptacle in order to return them to the central space.

[0035] It is noted that several variations are possible within the scope of the invention. The control unit 2 will usually comprise a suitable microprocessor including a memory and the like, so that desired provisions can be realised by suitable programming. The control unit 2 may for example keep a journal of all activities, which is supplied to the company via an output 32, for example a printer. The journal can also be supplied to a central computer via a data link, of course.

[0036] Furthermore it is noted that in the embodiment described herein the control unit 2 may consist of two parts instead of being made in one piece, wherein a first part arranges the control of the delivering system and a second part functions as a management control system. The control unit of the delivering system 9 may for example be fitted with a PLC.

[0037] Figures 3 and 4 show an alternative embodiment whose operation and use are largely similar to those of the embodiment that is shown in Figures 1 and 2. In the embodiment according to Figures 3 and 4, compartments 7 are used which are movable within safe 1, since they form part of a chain 33 that is passed over two wheels 34. In this embodiment the delivering system 9 comprises an operating element 35, which is fixedly disposed opposite the uppermost position 36 of a compartment 7. In this embodiment also the sensor 28 is mounted at the location of the operating element 35. Furthermore, the dispensing compartment 13 of dispensing cylinder 12 is provided with an access opening in the circumferential wall of the dispensing cylinder in this case.

[0038] The view of Figure 4 furthermore shows a panel 38, which panel may comprise a display as well as control means for communication with staff members of the bank or the service company. Such a display and control means are also present in the embodiment according to Figures 1 and 2. Although the safe 1 is shown to be open on the front side in the drawing, a safe door is present, of course, by means of which door the safe is closed after loading.

[0039] Figures 7 - 9 show a third embodiment of the device according to the invention. which largely corresponds to the embodiment that is shown in Figures 3 and 4. Like parts are indicated by like numerals. In this embodiment the dispensing cylinder 12 is disposed near the delivering opening 10. No openings 22 and 23 are present in the bottom plate 21 of frame 18, and the position according to Figures 5B and 5D are not used in this embodiment. A channel 39 is mounted in safe 1, in which a container 8 that has been pushed out of a compartment 7 by an operating element 35 is received. Container 8 is supplied through channel 39 to the dispensing compartment 13 of dispensing cylinder 12, which occupies the receiving position that is shown in Figure 5A. Once the container 8 is present in dispensing compartment 13, the dispensing cylinder 12 will turn to the delivery position that is shown in Figure 5C, and in this position an operating element, as schematically indicated by an arow in Figure 7, can push the container out of dispensing compartment 13, so that the client can take the container out via delivering opening 10. The operating element 40 may be fitted with a pneumatically

or electrically driven element, to which power is supplied via a hollow shaft 17 of cylinder 12.

[0040] Furthermore this embodiment does not employ a return receptacle 37. The device comprises a return channel 41, which is at least substantially in line with dispensing compartment 13 in the receiving position of dispensing cylinder 12. The control unit 2 can deliver the containers that have not been collected within a predetermined period of time, for example, to the return channel 41 one by one by actuating chain 33, operating element 35 and operating element 40. The delivery via return channel 41 is schematically shown in Figure 9.

[0041] With the devices described herein a safe door (not shown in the drawings) is usually opened in order to place containers 8 into the compartments 7 of the safe. It is also possible, however, to place containers 8 into the device described herein without opening the safe door, for example when a staff member of the bank wishes to place one container 8 or a few containers 8 into compartments 7. To this end an opening may be present in the safe door, the dimensions of which opening are adapted to the dimensions of container 8. Containers to be placed into the compartments can be supplied one by one to the device via said opening. The device may for this purpose be fitted with a transport mechanism, which places a container 8 into an empty compartment 7 under the control of the control unit 2.

[0042] Furthermore the delivering system 9 and the dispensing cylinder 12 of the device described herein may be constructed in such a manner that the delivering system can also transfer containers 8 to the compartments 7. With such a construction of the device the placing of a few containers into compartments 7 can likewise be done by a bank employee without opening the safe door. To this end the bank employee can identify himself to the control unit 2 by means of a special authorization pass or the like, after which the control system for supplying containers is enabled.

[0043] Moreover, when such an embodiment is used, a client can store a container 8 in the safe himself. To this end containers carrying a special return identification code can be supplied to clients. When a client has identified himself to the control unit 2 and places a container 8 into the delivering system, the control unit will recognize the return identification code and the container 8 will be placed into a compartment 7 or into a return compartment. The control unit 2 registers the fact that a container 8 carrying said return identification code has been received in the device and possibly the fact that said container 8 is associated with said client. According to another possibility, the return identification code includes a client code. This makes it possible to use the device described herein as a sort of night safe.

[0044] In the foregoing the invention has been explained by means of an implementation thereof in a bank building. It will be understood that the device can also be disposed at other locations, for example in a supermarket. Furthermore it is possible to use the device for delivering objects other than valuable papers, for example for delivering medicines in/at hospitals or pharmacies. Furthermore it is possible to use the device for supplying methadon in projects for drug addicts.

[0045] Although the supplying and discharging of the containers takes place by a service company in the exemplary embodiment that is described herein, said supplying and discharging can also take place via a suitable transport system, such as a pneumatic dispatch system, for example. Furthermore it is possible to dispose the device at a location not adjacent to an outside wall. The device could be disposed at a location inside the building, whereby a transport system transports a container delivered by the device to the delivering opening for the client.

[0046] Accordingly, the invention is not limited to the exemplary embodiments as described in the foregoing, which can be varied in several ways without departing from the scope of the claims.

Claims

1. A method for delivering valuable objects or the like to clients, wherein the client orders a valuable object from a supplier via a communication link, and said supplier makes the order valuable object available to the client, characterized in that an ordered valuable object is provided with an object identification that can be machine-read, which identification is linked to a client identification, wherein the object identification and the client identification are registered in a data file, wherein ordered valuable objects are placed in at least one device for delivering valuable objects, wherein the data file is stored in a memory of a control unit of the device, which device includes a control panel for the client as well as client identification means, wherein an ordered valuable object can be dispensed by the device, once a client has been identified, under the control of a user interface programme.

2. A method according to claim 1, wherein ordered valuable objects are packed in containers at at least one location, which containers are provided with said object identification, wherein a client, upon placing his order, can state a location for the delivering device where said client wishes to collect his order.

3. A method according to claim 1 or 2, wherein the control unit monitors the time that a valuable object is present in the delivering device, and wherein valuable objects that have not been collected are removed from the delivering device when a predetermined period of time is exceeded.

4. A method according to claim 1, 2 or 3, wherein the client can indicate via the user interface programme that he does not wish to receive the valuable object he has ordered, wherein valuable objects that are not desired are removed from the delivering device.

5. A method according to any one of the preceding claims, wherein the supplier has a website on a computer network, where clients can order valuable objects.

6. A method according to any one of the preceding claims, wherein containers provided with a return identification code are supplied to clients, wherein the control unit places a container provided with a return identification code into the device upon presentation of said container and registers said return identification code, possibly together with a client identification.

7. A device for delivering valuable objects or the like to a client, comprising a safe for storing said valuable objects, a control panel for the client, a delivering system for delivering valuable objects to the client, which system comprises a delivering opening outside the safe, which is accessible to the client, a control unit and a display for communication with the client, wherein the control unit is arranged for actuating the delivering system in dependence on selections made by the client via the delivering system, characterized in that the safe includes a number of compartments for containers in which valuable objects are packed, wherein the control unit is arranged for detecting the presence of containers in the compartments, wherein said containers are provided, at least in part, with an object identification, wherein the control unit comprises a memory, in which a data file containing object identifications and client identifications linked therewith can be stored, wherein the control unit is arranged for signalling to a client upon identification of said client that a container that is intended for said client is present in the device, wherein the control unit is furthermore arranged for delivering said container by means of the delivering system upon operation of the control panel.

8. A device according to claim 7, wherein a sensor for detecting containers is connected to the control unit, and wherein the control unit is arranged for detecting the presence of containers and for registering the location of the containers in the compartments.

9. A device according to claim 7 or 8, wherein the control unit is capable of actuating the delivering system for removing containers from the safe, for example when the containers have been present in the safe longer than a predetermined period of time.

10. A device according to claim 7, 8 or 9, wherein the control unit is provided with an input for inputting data of containers that have been placed into the safe, wherein the control unit compares the data received via said input with the detected data, wherein the control unit signals any differences.

11. A device according to any one of the claims 7 - 10, wherein a conveying system for supplying/discharging containers to and from the safe is present, and/or wherein a conveying system is disposed between the dispensing means and the delivering opening.

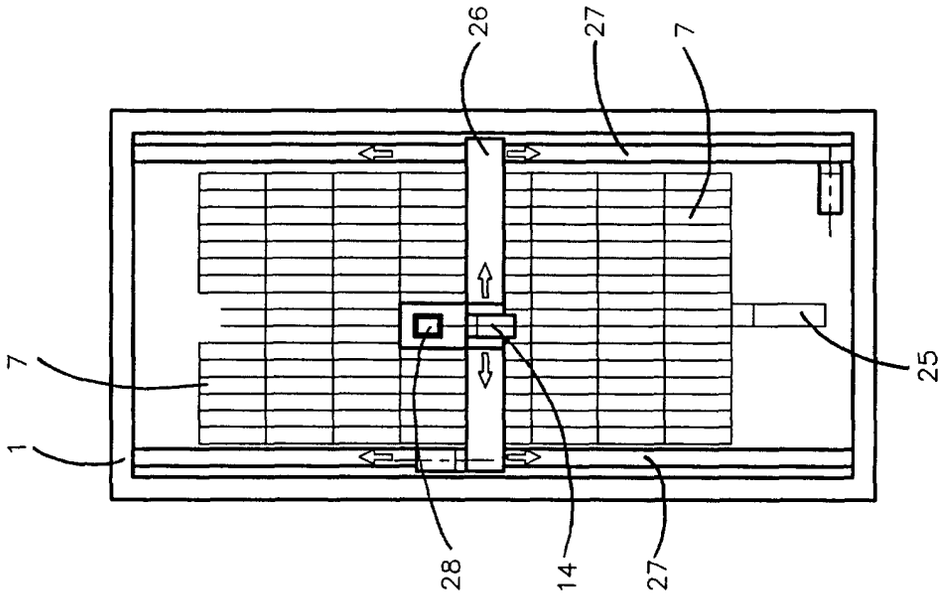
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fig.2

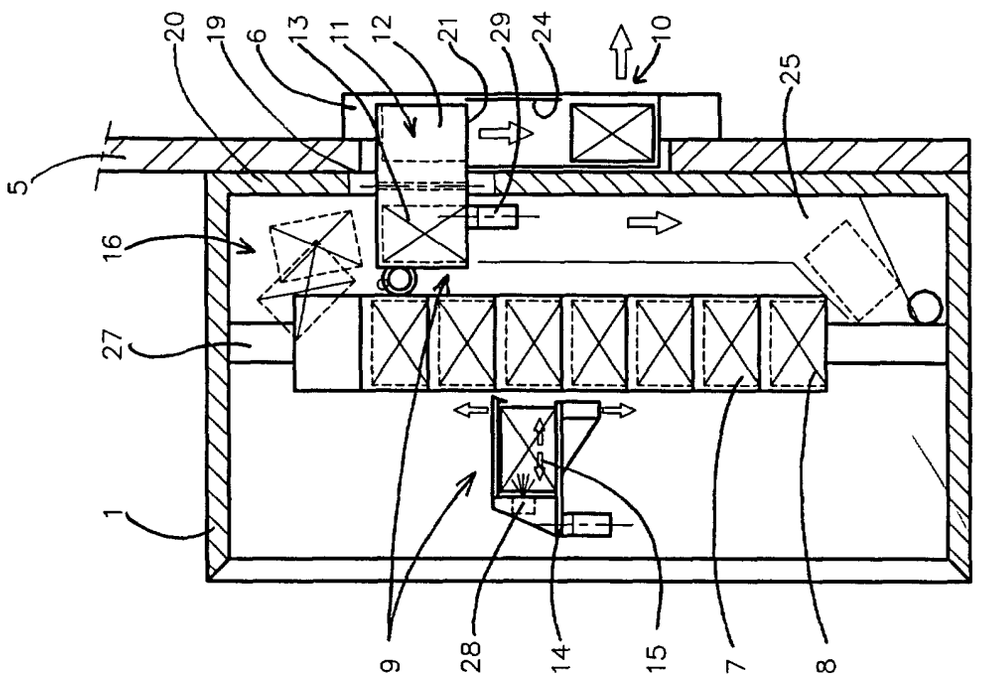
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fig.1

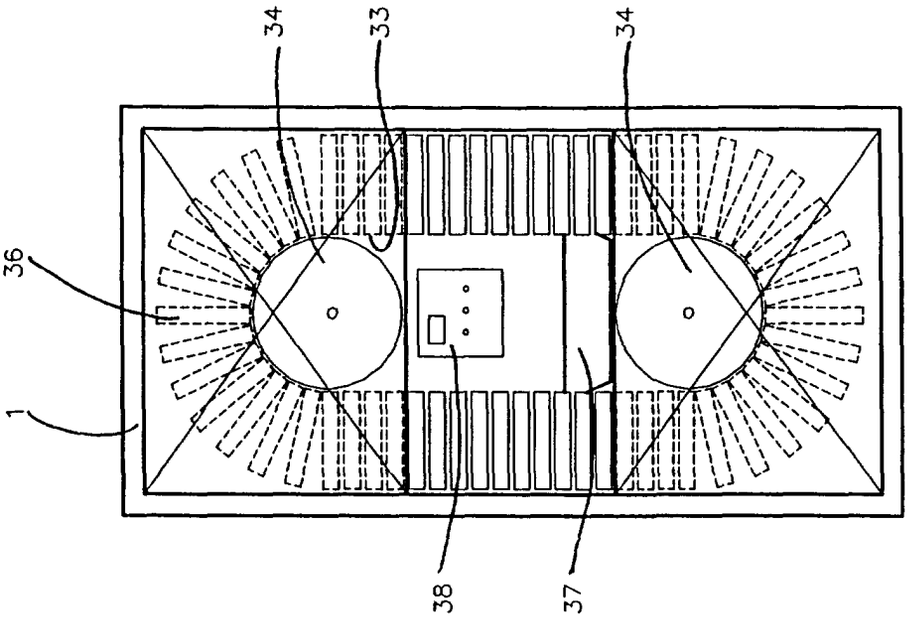

fig.4

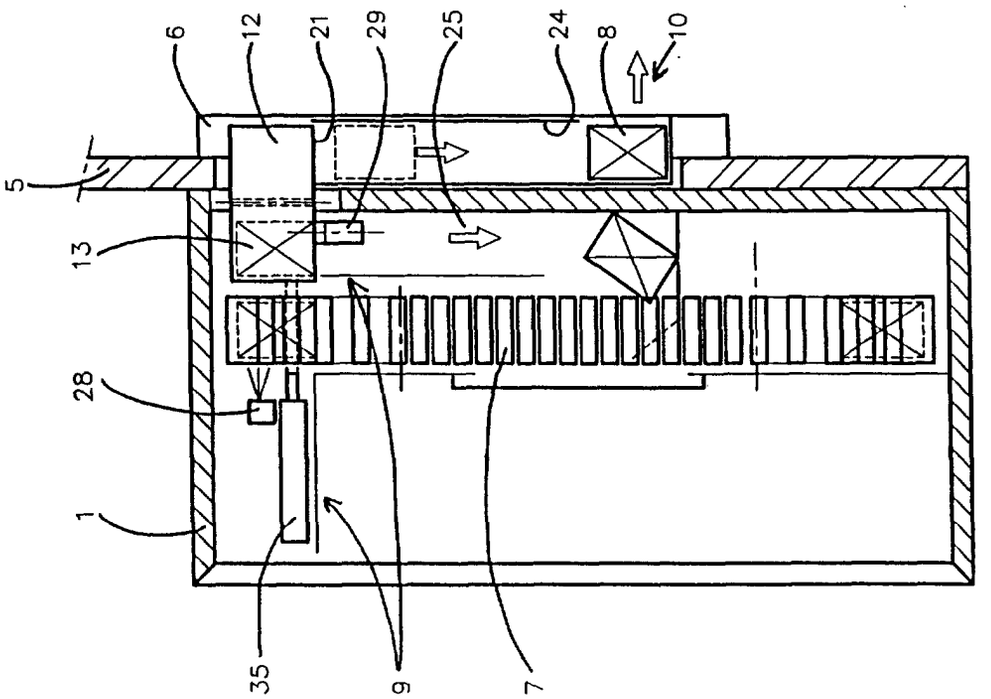

fig.3

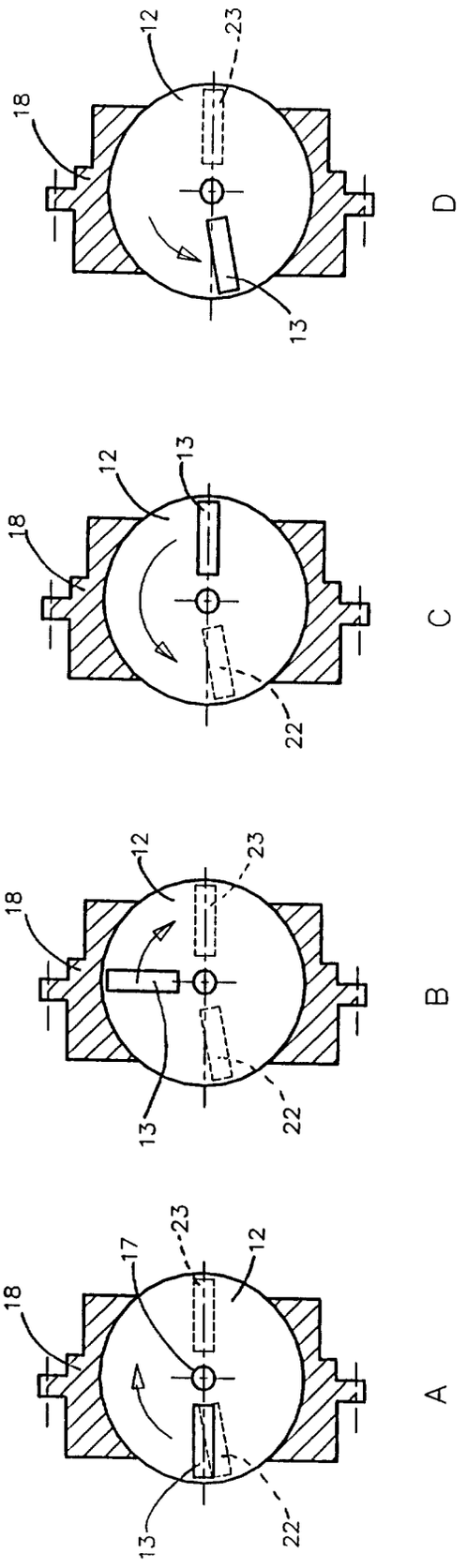

fig.5

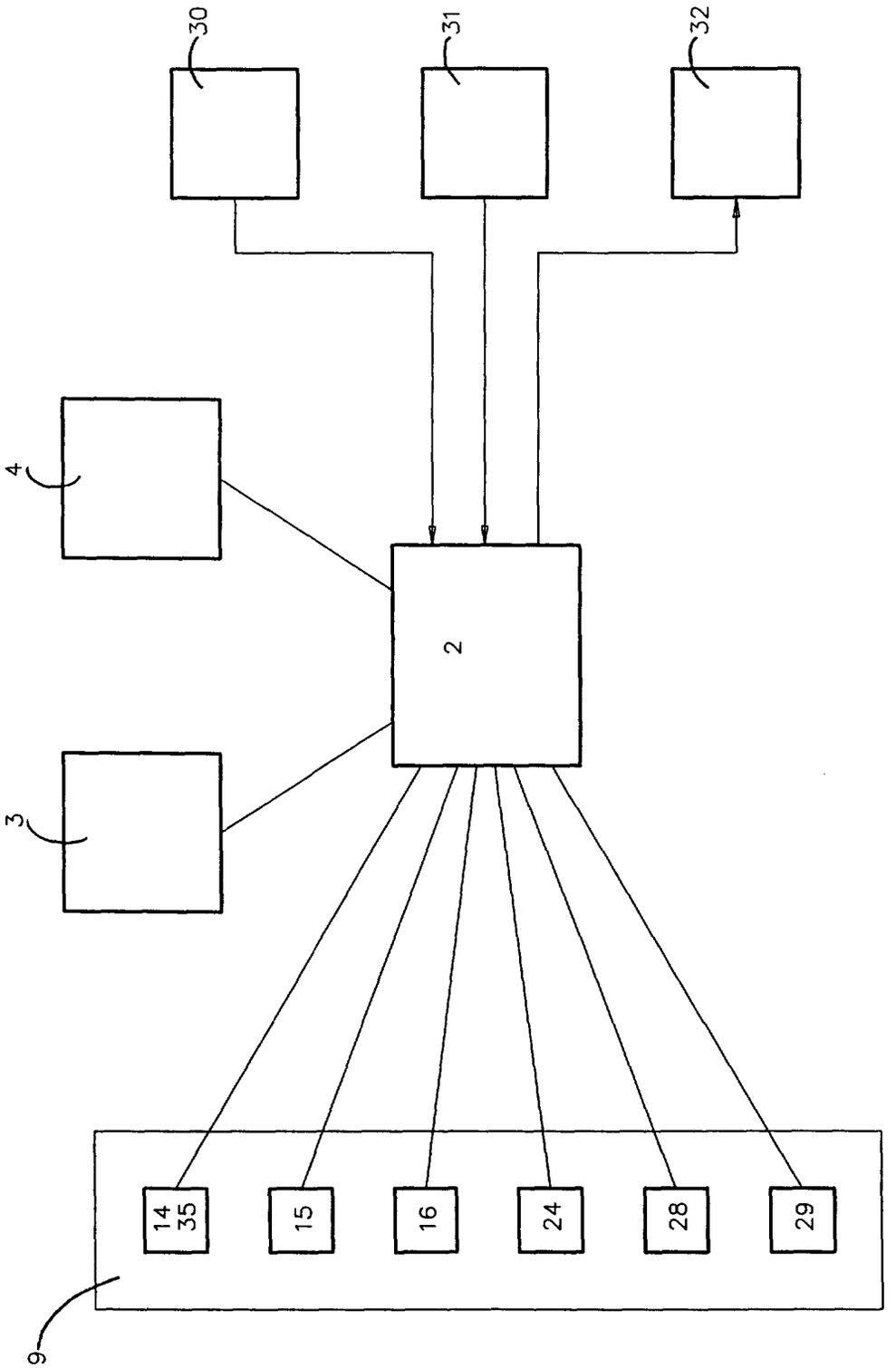

fig.6

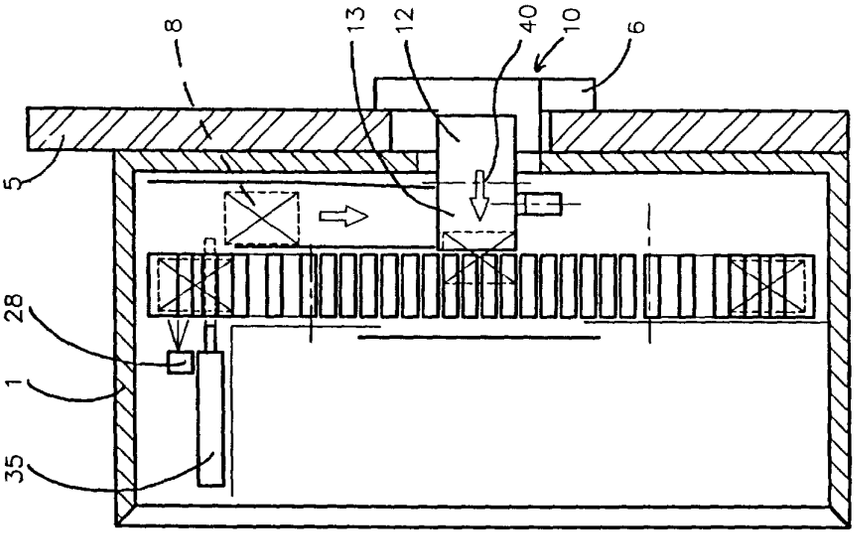

fig.9

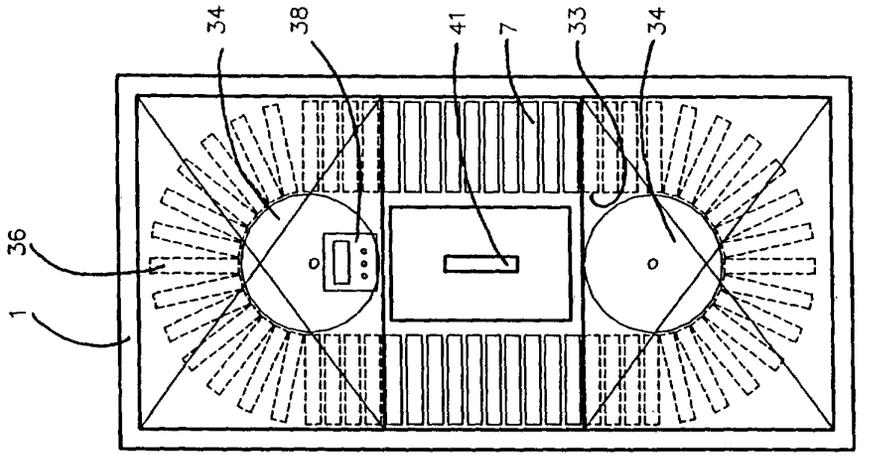

fig.8

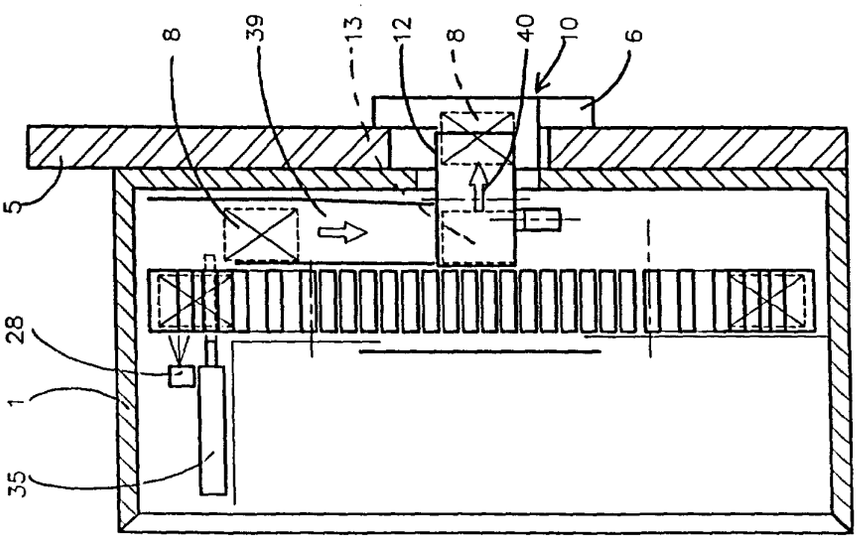

fig.7