

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
28 February 2008 (28.02.2008)

PCT

(10) International Publication Number
WO 2008/024043 A1

(51) **International Patent Classification:**

G07D 9/00 (2006.01) G07F 9/06 (2006.01)
G07D 3/00 (2006.01) G07G 1/00 (2006.01)

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(21) **International Application Number:**

PCT/SE2007/000733

(81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, **BB**, BG, **BH**, **BR**, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, **DK**, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, **HR**, HU, **ID**, **IL**, IN, **IS**, **JP**, KE, KG, KM, KN, **KP**, **KR**, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, **PH**, PL, PT, **RO**, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, **TJ**, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

(22) **International Filing Date:** 20 August 2007 (20.08.2007)

(25) **Filing Language:** English

(26) **Publication Language:** English

(30) **Priority Data:**

0601745-3 25 August 2006 (25.08.2006) SE
60/840,212 25 August 2006 (25.08.2006) US

(84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

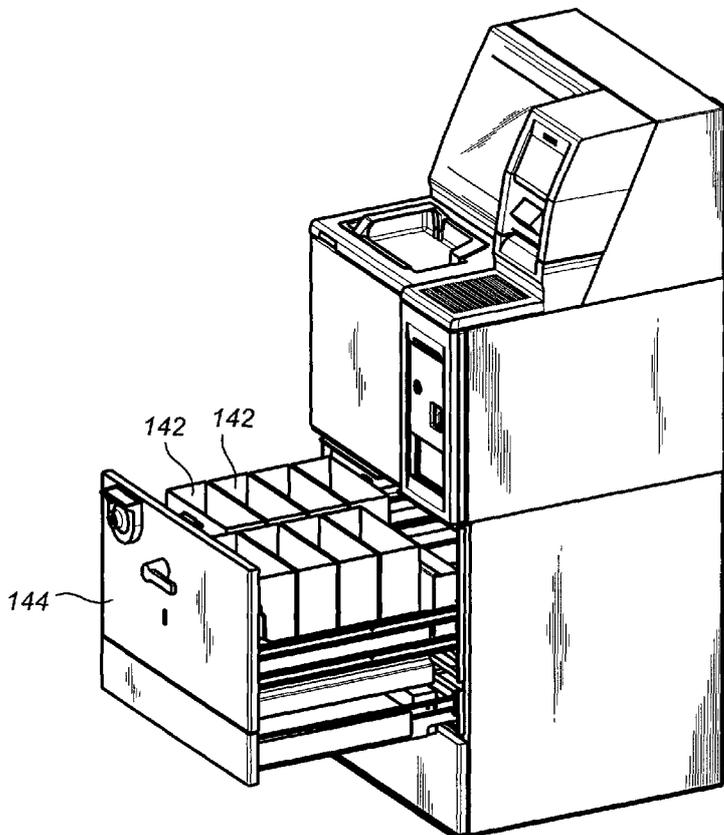
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(54) **Title:** A COIN DISPENSING APPARATUS AND A COIN DEPOSIT AND DISPENSING APPARATUS



(57) **Abstract:** A coin dispensing apparatus (100) has a cabinet (102) serving as an apparatus housing for said apparatus (100). The apparatus further has a controller and at least one dispenser for coins to be dispensed. The apparatus is adapted to dispense a specific composition of coins, under control by the controller, from said at least one dispenser (142) to a portable coin receptacle. A closeable dispense space (148) is arranged within said cabinet (100), and closeable dispense space (148) has an open state which permits reception of the portable coin receptacle to be filled, and a closed state which permits dispensing of said specific composition of coins from said at least one dispenser (142) into the portable coin receptacle while shielding said closeable dispense space (148) from external access during the dispensing.

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Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(U))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

— *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report*

A COIN DISPENSING APPARATUS AND A COIN DEPOSIT AND
DISPENSING APPARATUS

Field of the Invention

The present invention generally relates to cash handling, and more specifically to coin deposit equipment and coin dispensing equipment.

5

Technical Background

Retail cash systems (RCS) are used for handling of cash, such as coins, notes (bills), cheques or coupons in a retail establishment. The systems generally comprise a coin deposit apparatus and/or a coin
10 dispensing apparatus.

The coin deposit apparatus has to discriminate between different types of acceptable coins, such as valid coins in a plurality of denominations in one or more specified currencies. Preferably, it should also be capable of detecting unacceptable cash, such as fake (counterfeit) coins or coins of a
15 foreign currency. In the coin deposit apparatus a coin acceptance module (CAM) handles the discrimination of the coins and is also adapted to count the coins to register the deposited amount. One typical user is a cashier emptying a till after a work shift.

The coin dispensing apparatus contains coins of various
20 denominations. It generally dispenses a specified composition or amount of coins based on the input of a user. It also registers the amount of coins dispensed. The coin dispensing apparatus contains several storage receptacles, typically one for each type of denomination to be dispensed, from which the coins are dispensed. One typical use case in this context is a
25 cashier filling a till at the beginning of a work shift.

The coin deposit apparatus and coin dispensing apparatus can be combined into what is called a coin (or cash) recycling system. In order for such a system to work properly the coin acceptance module of the system also includes sorting capabilities, so that different denominations are
30 discriminated and stored separated from each other, while waiting to be dispensed.

The coin recycling system also has a controller keeping track of all transactions occurring in the system. The system can therefore be utilized as the heart of a settlement system for a retail establishment.

5 WO-05/1 04046 discloses a cash recycling machine for a retail establishment in accordance with what has been described above. WO-05/1 04046 describes how a till is placed with its front end supported on a ledge in order to receive multiple denominations in a sorted condition simultaneously. The described system also provides for bagging operations.

10 Though functional, previous attempts have not been fully satisfactory. The described system has some drawbacks in that it requires maintenance regularly and often if it should be used in a retail establishment. As soon as a bulk coin storage receptacle for one denomination is full, it has to be emptied manually and the machine needs to be stopped. The coin recycling machine of the cited patent also involves areas through which it is possible for
15 unauthorized people to manipulate parts of the machine's interior. These areas also collect dust and other impurities that potentially could affect the function of the machine. These areas involve a ledge or other cavities where dust and dirt can accumulate and jeopardize the function of the machine.

20 Summary

The present invention generally aims at eliminating or at least reducing the problems discussed above as well as other problems. This is accomplished with an apparatus in accordance with the appended independent claims.

25 A first aspect is a coin dispensing apparatus comprising a cabinet serving as an apparatus housing for said apparatus, a controller, and at least one dispenser for coins to be dispensed, said apparatus being adapted to dispense a specific composition of
30 coins, under control by the controller, from said at least one dispenser to a portable coin receptacle, the apparatus further having a closeable dispense space within said cabinet, said closeable dispense space having an open state which permits reception of the portable coin receptacle
35 to be filled, and a closed state which permits dispensing of said specific composition of coins from said at least one dispenser into the portable coin receptacle while

shielding said closeable dispense space from external access during the dispensing.

The closable dispense space reduces the possibilities for an unauthorized person to manipulate the apparatus. This is true during
5 dispensing as well as when the apparatus is not being used, since the active components of the apparatus are housed inside the cabinet. The closable dispense space also renders it more difficult for dust, litter and other foreign matter from entering the interior of the apparatus, which is beneficial from a operational reliability point of view. This in turn reduces the resources needed
10 for maintenance, making the apparatus more economic.

In one or more embodiments, a movable member is provided which defines at least a partial boundary of said closeable dispense space, said movable member being capable of assuming a first position to achieve said open state, and a second position to achieve said closed state.

15 One or more embodiments may further comprise locking means coupled to said controller and associated with said movable member, said locking means being adapted, under control by said controller, to selectively prevent and allow said movable member to move from its second position towards its first position.

20 Advantageously, the locking means and the controller are adapted to prevent removal of the portable coin receptacle during the dispensing by keeping the movable member in its second position (closed state). This both improves security (by preventing manipulation of the internal parts of the apparatus, including the dispensers, and making the dispensed coins in-
25 accessible) and enhances operational reliability (by preventing dust, dirt or other foreign matter from entering the internal parts of the apparatus while it is running a dispensing operation, and by preventing a coin jam situation that could occur if the portable coin receptacle would be suddenly removed during dispensing).

30 Moreover, in one or more embodiments, the locking means and the controller are adapted to require positive identity verification of a user (for instance in the form of verified data as read from a personal data carrier and/or input by said user in a user interface of the apparatus in the beginning of a coin dispense operation). Only once the identity of the user has been
35 verified, and his authority to perform a dispense operation thereby has been confirmed, will the controller and the locking means allow the movable member to be moved to its first position, in which the closeable dispense

space is in its open state and the user may place his portable coin receptacle therein.

In one or more embodiments, the movable member is embodied as a drawer, wherein said first position is a position where said drawer is extended
5 outwardly from said cabinet, and wherein said second position is a position where said drawer is retracted inside said cabinet.

A first sensor may be coupled to said controller and be positioned and adapted to detect when said movable member is in said second position.

Furthermore, a second sensor may be coupled to said controller and
10 be positioned and adapted to detect the presence of said portable coin receptacle within said closeable dispense space.

In one or more embodiments, which comprise first and second dispensers for first and second types of coins to be dispensed, said portable coin receptacle is advantageously a cash till having first and second
15 compartments adapted to receive coins of said first and second types from said first and second dispensers, respectively.

Such a cash till may or may not have compartments also for notes, etc. In other embodiments, the portable coin receptacle may be constituted by one or more separate or connected coin boxes, coin tubes, coin bags, etc, with or
20 without appropriate holder or guide means within the closeable dispense space for accurate positioning with respect to the dispensers.

The apparatus may further comprise a coin acceptance module adapted to receive and sort a deposited mass of coins into said first and second dispensers for buffering therein. Such an apparatus thus constitutes
25 or forms part of a cash recycling system.

One or more embodiments may further comprise a closeable storage space within said cabinet, separated from said closeable dispense space and being adapted to receive a transport container, wherein said controller is configured to control at least one of said first and second dispensers to
30 discharge one or more coins to said transport container when placed in said closeable storage space.

This arrangement allows for efficient and automatic relief of a situation when a particular dispenser has buffered so many coins (as deposited and sorted by the coin acceptance module) that it approaches a state of
35 overfilling. More particularly, buffer capacity determining means may be provided for each dispenser, wherein said controller will be adapted to detect when a current buffer capacity of a particular dispenser (e.g. the current

amount, volume or level of coins in the particular dispenser) exceeds a threshold value and in response control the particular dispenser to discharge a specific number of coins to be received in the transport container. Thus, this arrangement provides a controlled balancing of the fulness of the dispensers, such that any excessive coins are discharged to the transport container rather than causing an interruption of the apparatus operation due to overfilling of one of the dispensers. Excessive coins may be accumulated in the transport container, which conveniently may have a large storage capacity and be safely accommodated within the closeable storage space, waiting for the arrival of an authorized person, such as a CIT (Cash In Transit) person, to ultimately empty or collect the transport container.

The buffer capacity determining means may for instance be implemented as a dedicated capacity sensor for each dispenser. Alternatively, the controller may implement the buffer capacity determining means by keeping continuous track of the different types of coins deposited, processed in the coin acceptance module and buffered in the respective dispensers.

The controller may be adapted to detect that a coin as processed by the coin acceptance module and destined to a particular dispenser causes the current buffer capacity of said particular dispenser to exceed said threshold value, and in response control said particular dispenser to discharge a coin to the transport container.

In one or more embodiments, the closeable storage space is formed by a movable and closeable transport container drawer, which in an opened, extended position is adapted to receive the transport container and in a closed, retracted position is adapted to accommodate said transport container and prevent it from unauthorized external access.

Said closeable dispense space may be positioned between said dispensers and said closeable storage space, a passage being formed from a coin output end of said dispensers, through said closeable dispense space when no portable coin receptacle is present therein, to a coin input end of said closeable storage space.

Thus, when no portable coin receptacle is present in the closeable dispense space (i.e. when the apparatus is currently not used for a dispensing operation), the closeable dispense space may be used as an intermediate channel through which coins can be forwarded from any of the dispensers to the transport box. This has an advantage in terms of apparatus

size; the closeable dispense space is used for two different purposes - as receiving area for the portable coin receptacle during a dispense operation, and as forwarding channel to the transport box during a deposit operation.

5 Access restricting means may be positioned between said closeable dispense space and said closeable storage space, said access restricting means preventing visual and human physical access from said closeable dispense space into said closeable storage space while permitting coins to pass therethrough into the transport container. This gives a further improved security.

10 It is to be noticed that there are no particular limitations as regards the specific composition of coins which is dispensed to the portable coin receptacle. Generally, any combination of coins of one or more types (such as one or more denominations of coins from one or more currencies) and in one or more amounts is possible. The dispensers are not limited to a
15 particular number, and there are no particular limitations in the relation between the number of dispensers, what types of coins they handle, and how such types of coins are received in the portable cash receptacle.

Moreover, the term "coins" is to be interpreted as encompassing monetary coins but also similar value-representing objects such as markers
20 or tokens.

A second aspect is a coin deposit and dispensing apparatus comprising
a cabinet serving as an apparatus housing for said apparatus,
a controller,
25 a coin acceptance module adapted to receive and process a deposited mass of coins, and

one or more dispensers for one or more types of coins to be dispensed,

wherein, in a deposit operation, said dispensers are adapted to receive
30 said deposited and processed mass of coins for buffering therein, and

wherein, in a dispensing operation, said dispensers are adapted to dispense a specific composition of coins, under control by the controller, to a portable coin receptacle at a dispense location, the apparatus further having
a closeable storage space positioned within said cabinet at a storage
35 location different from said dispense location, said closeable storage space being adapted to receive a transport container, wherein said controller is configured to control at least one of said first and second dispensers to

discharge one or more coins to said transport container when placed in said closeable storage space.

Buffer capacity determining means may be provided for each dispenser, said controller being adapted to detect when a current buffer
5 capacity of a particular dispenser exceeds a threshold value and in response control the particular dispenser to discharge a specific number of coins to be received in the transport container.

The controller may be adapted to detect that a coin as processed by the coin acceptance module and destined to a particular dispenser causes
10 the current buffer capacity of said particular dispenser to exceed said threshold value, and in response control said particular dispenser to discharge a coin to the transport container.

The closeable storage space may be formed by a movable and closeable transport container drawer, which in an opened, extended position
15 is adapted to receive the transport container and in a closed, retracted position is adapted to accommodate said transport container and prevent it from unauthorized external access.

The apparatus of the second aspect may have a closeable dispense space at said dispense location within said cabinet for receiving the portable
20 coin receptacle during said dispense operation, wherein said closeable dispense space is positioned between said dispensers and said closeable storage space, a passage being formed from a coin output end of said dispensers, through said closeable dispense space when no portable coin receptacle is present therein during said deposit operation, to a coin input end
25 of said closeable storage space.

Access restricting means may be positioned between said closeable dispense space and said closeable storage space, said access restricting means preventing visual and human physical access from said closeable
30 dispense space into said closeable storage space while permitting coins to pass therethrough into the transport container.

Other objectives, features and advantages of the present invention will appear from the following detailed disclosure, from the attached dependent claims as well as from the drawings.

Generally, all terms used in the claims are to be interpreted according
35 to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to "a/an/the [element, device, component, means, step, etc]" are to be interpreted openly as referring to at least one in-

stance of said element, device, component, means, step, etc., unless explicitly stated otherwise. The steps of any method disclosed herein do not have to be performed in the exact order disclosed, unless explicitly stated.

5 Brief Description of the Drawings

Figs. 1-4 are perspective front views of a cash deposit and dispensing apparatus according to a first embodiment of the invention.

Fig. 5 is a perspective view illustrating a coin dispenser used in the first embodiment of the invention.

10 Fig. 6 is a perspective view of a filling distributor used in the first embodiment of the invention.

Figs. 7, 8 and 10 are views similar to Figs. 1-4.

Fig. 9 is a detailed, partial perspective view of a locking mechanism used for the first embodiment of the invention.

15 Fig. 11 is a front perspective view of a third embodiment of the invention.

Detailed Description of Embodiments

20 Fig 1-10 illustrates a coin deposit and dispensing apparatus 100 in accordance with a first embodiment of the invention. The apparatus is comprised in a single cabinet 102 and includes several combined modules, each filling one or more specific functions. It is emphasized that the combination of modules, as well as functions within an individual module, described in the following in some detail with reference to the drawings is not
25 the only possible alternative. Modules and functions within individual modules can be added, altered, and excluded without leaving the inventive concept as defined by the appended claims.

The apparatus 100 generally consists of three main modules: a user interface module 104 at the top of the apparatus 100, a cash storage module
30 106 at the bottom of the apparatus, and a cash processing module 108 there between. These modules 104, 106, 108 are divided into submodules and will be described in the following.

The purpose of the apparatus 100 is to simplify and render more effective the handling of cash in general and coins in particular. Instead of
35 sending all incoming coins from customers to a remote bank or CIT company and thereafter receiving coins for daily operation from the same bank, etc., the apparatus 100 renders it possible to recirculate coins from customers to

the highest possible extent. This reduces costs related to CIT operations and work related to handling and maintenance. Further, the apparatus 100 simplifies the daily handling of coins. The apparatus 100 according to the first embodiment of the invention has two main operations: coin deposit (where
5 coins are input by a user and then counted, sorted and buffered) and coin dispensing (where coins buffered in the apparatus are dispensed to a user).

The user interface module 104 has a touch-sensitive display screen 110 ("touch screen" in the following) through which the user may communicate with the apparatus; instructing it what to do as well as receiving
10 useful information. This module also has a card reader 112, used for identification purposes, and a printer 114 for printing receipts, statistics and such. A controller e.g. a CPU (not shown), is located within the cabinet 102, behind the screen 110. In this embodiment, the controller serves as a central controller unit for the entire apparatus 100, including the coin processing
15 module 108. Other embodiments may however use one or more local controllers in some or all of the modules of the apparatus, such local controllers being configured to cooperate as required. Obviously the user interface module 104 can comprise any useful feature commonly used, such as input keys, a bar code reader, a speaker, a microphone and other I/O
20 devices. A user, such as a cashier by the end of a shift, will log on by inputting certain identification data. This may involve entering a personal code on the touch screen 110 and/or feeding a personal data carrier to the card reader 112 (such as a magnetic card, a smart card, an electronic ID-tag, etc.

When depositing coins the user empties, e.g., a till into a coin input tray
25 116. The contents of such a till can be an mixed mass of coins, valid as well as invalid, as well as other foreign material such as paper clips, dust etc. Note that valid coins could include more than one currency (including tokens, jubilee coins, gift coins and such). The end-user may then tilt the tray 116 by lifting it by the handle 118, thereby causing the contents to slide down the
30 bottom surface of the tray 116 and into the interior of the cash processing module 108.

In the cash processing module 108 the contents first passes an automatic coin conditioning (ACC) unit 122. This unit is shown in greater detail in Fig. 2. Like most of the other submodules the ACC-unit 122 is
35 slidably arranged on a pair of rails so that it can be retractably pulled out from the interior of the cabinet. In Fig. 2 the ACC-unit 122 is shown in the pulled-out state. The ACC-unit involves a vibratory arrangement of perforated plates

124. This arrangement will separate foreign matter from the mass of coins. When the cash has been conditioned in the ACC it is forwarded to a cash acceptance module (CAM) 126.

5 The cash acceptance module 126 is shown in greater detail in Fig. 3, in a pulled-out state, similar to the ACC-unit of Fig. 2. One purpose of the CAM 126 is to separate valid coins from invalid ones. The CAM 126 also serves the purpose of determining the typ (e.g. denomination) of the valid coins, to count the number of valid coins of each type (denomination), and to sort them, thus enabling full control of transactions occurring thus far in the apparatus 100.

10 The ACC 122 forwards the conditioned coins to a hopper bowl 128 via a receiving tray (not shown). A rotary flexible disc 130 is provided in the hopper bowl 128 and acts to pick up individual coins and bring them to the beginning of a downwardly sloping coin rail 132, mounted to a backwardly inclined front plate 134 of the CAM 126. Each coin will roll, by gravity, down the coin rail

15 132 and past a coin sensor unit 136.

The coin sensor unit 136 will detect certain physical properties of the passing coin, such as conductivity, permeability, diameter and thickness, and compare these to prestored coin reference data in a memory by way of a processor in or coupled to the CAM 126. If the comparison fails to identify the

20 coin as a coin of a valid denomination, it will be regarded as invalid and be deflected through a reject channel 138 to a cash reject area 140.

If on the other hand a valid denomination has been established for the coin, its denomination or associated value will be recorded for later use when calculating a total value for all valid coins processed during the coin deposit

25 transaction upon its completion.

Valid coins roll down the rail 132 and are transported by a rotary carrier disc 141 along a circular sorting path across a series of openings in the front plate 134. The openings are of increasing size, such that coins of the smallest diameter will fall down through the first opening in the transport direction,

30 whereas coins of the second smallest diameter are separated through the next opening, etc. A channel system (not shown) at the back of the front plate 134 will guide the thus sorted coins into correct dispensers 142 of a dispenser unit 144, best seen in its pulled-out state in Fig. 4.

Note that valid coins could include more than one currency, e.g. a retail

35 establishment could accept more than one currency (including tokens, jubilee coins, gift coins and such) as payment from its customer. The change given back to a customer, however, usually includes a single currency. This means

that the CAM accepts coins that are not to be dispensed at a later stage. These latter coins can be stored in separate dispensers 142 (by denomination/type), a single dispenser 142 or be bypassed directly or indirectly to a transport container/transport box 170. The number of coins, as well as their denomination, is registered by the controller before they enter the dispensers.

As visualised in Fig. 5 an individual dispenser 142 comprises two main parts, a buffer container 143 (the visible part of the dispensers 142 in Fig. 4) and a ejector/counter 144, which may be of any type known per se, such as electromechanical or pneumatic. Each dispenser 142 communicates with the controller. Each dispenser 142 has a buffer capacity associated with a threshold value, usually referring to the number of coins it is allowed to contain. If, during a deposit procedure, the threshold value is reached, the coin ejector 144 associated with the dispenser 142 will typically eject one coin for each coin the dispenser 142 receives. The ejected coins will then fall into the transport box 170. The transport box 170 is located in the cash storage module 106 at the bottom of the cabinet 102 and will be described closer further on.

The dispensing operation will now be described.

When the user wishes to fill a portable coin receptacle, in this particular embodiment a till 146 with several coin compartments (see Fig. 8), with coins, at the start up of shift, the user logs on like before by using the touch screen and personal card. Codes and cards are verified and access is granted. After choosing the dispense function, the controller controls an extendible till drawer 148 to be ejected from the cabinet 102, see Fig. 7. The drawer 148 itself is a movable member providing a closeable dispense space and could as such be replaced with a hatch or the like in other embodiments. The drawer is a standard type metal sheet drawer with a reinforced steel front. The drawer 148 has a hole 150 in the bottom surface, which allows coins to fall past the drawer 148 into the transport box 170 in the absence of a till 146 being placed in the drawer. The bottom of the drawer also comprises guide means 152 in order to localise the till 146 in the drawer. The user places the till 146 in the drawer 148, see Fig. 8, and closes it by pushing it back into the cabinet 102. The drawer 148 will then be automatically locked in its closed position by means of an electromechanical locking device.

The drawer 148 itself is supported by a telescopic rail 154, attached to the inside of the cabinet, in a standard fashion and similar to the other pull-out

units. One type of drawer ejection/locking system is shown in Fig. 9, though several different possible systems are anticipated. In Fig. 9 is shown how a latch 156 of the electromechanical locking device engages an opening 158 in the inner part of the drawer 148.

5 When the drive 160 of the device is commanded to open by the controller, it rotates to push the latch 156 out of engagement with the opening 158. Once the engagement has ceased, the latch 156 will remain in the disengaged position long enough to permit a compressed spring 162 to force the drawer 148 towards the open position, thereby constituting the open state
10 of aforesaid closeable dispense space. In some implementations, manual assistance may be required from the user to pull the drawer 148 to a fully extended position. The latch 156 is biased towards the locked position so that when the force of the drive 160 terminates the latch will 156 return to the
15 locked position. The user places the till 146 in the drawer 148 and pushes the drawer to its closed position. As the drawer reaches the latch 156 the latter will be pushed upwardly, permitting the drawer 148 to assume the locked position in which it compresses the spring 162 and constituting the closed state of the aforesaid closeable dispense space. A first sensor then verifies that the drawer is closed and a second sensor 164 verifies that the till 146 is
20 placed in the drawer 148, after which the actual dispensing of coins can be initiated by the controller. After the dispensing is finalised, the drawer is automatically unlocked and ejected. This is governed by the controller and can obviously be altered in accordance with the wishes of a user.

The apparatus 100 is generally customized for one type of till 146 in
25 that a specific filling distributor 166, see Fig. 6, is arranged between the dispensers 142 and the till 146. The filling distributor 166 serves to lead coins from a certain coin ejector 144 to a certain compartment in the till 146. Each ejector 144 is arranged to eject coins into a corresponding hole 168 in the filling distributor 166, which hole 168 in turn is associated with a
30 corresponding channel 169 in the distributor 166. In the first embodiment the ejectors 144 will eject coins with quite high velocity, which is why the partition wall of the dispenser 166 is perforated, see Fig. 6, in order to reduce noise. Each retail system/apparatus can be associated with more than one filling distributor 166 if needed.

35 As shown in Fig. 10 the transport box drawer 170 is located in the cabinet 102, below the till drawer 148. To prevent unauthorized personnel, in this case personnel that are allowed to access the till drawer 148 but not the

transport box drawer 170, from accessing the transport box drawer 170 via the till drawer 148 (see Fig. 7), access restricting means are arranged. These means include a steel curtain 172 above the transport box drawer 170. The steel curtain comprises an arrangement of steel gills inclined upwardly, away
5 from an opening direction of the till drawer 148, preventing human visual and physical access to the transport box drawer 170 while allowing coins to pass into the latter. To collect coins dispensed into the transport box drawer 170, any suitable type of storage means may be arranged therein.

Access to the transport box drawer 170 is permitted for selected
10 personnel only. In practise only personnel from a CIT company can access the transport box. The same personnel can also instruct the system to empty the whole contents of the dispensers 142 into the transport box drawer 170. This may be desired when the apparatus 100 is to be physically moved, reconditioned or similar.

Access to the various modules is generally differentiated. The day to
15 day user can access the till drawer 148 only. This access is permitted after the user has logged on and after the verification of a personal card. The access to the coin dispensers 142 is generally restricted to a few individuals. The coin dispenser door 174 is opened with a security lock 176 code and a
20 key inserted in a key hole 178. In the first embodiment of the invention a ledge on the upper part of the till drawer 150 prevents the dispenser drawer 144 from being opened. This makes it more difficult for unauthorized personnel to access the interior of the cabinet. When the dispenser drawer 144 is correctly accessed the till drawer 150 will also be unlatched to permit
25 opening.

According to a second embodiment (not shown) the arrangement for receiving the till is of prior-art type, i.e., with a non-closeable dispense space in the form of a ledge/recess or similar. According to this embodiment the invention concerns a cash deposit and dispensing apparatus provided with a
30 transport box according to the description above.

In a third embodiment, see Fig. 11, the apparatus of the first or second embodiment is combined with a note module 180 for the handling of notes (bills). The note module 180 is designed according to prior art and has note depositing and dispensing capabilities. The addition of a note module 180
35 widens usability of the inventive apparatus.

CLAIMS

1. A coin dispensing apparatus (100) comprising
a cabinet (102) serving as an apparatus housing for said apparatus
5 (100),
a controller, and
at least one dispenser (142) for coins to be dispensed,
said apparatus (100) being adapted to dispense a specific composition
of coins, under control by the controller, from said at least one dispenser
10 (142) to a portable coin receptacle (146),
characterized by a closeable dispense space within said cabinet, said
closeable dispense space having
an open state which permits reception of the portable coin receptacle
(146) to be filled, and,
15 a closed state which permits dispensing of said specific composition of
coins from said at least one dispenser (142) into the portable coin receptacle
(146) while shielding said closeable dispense space from external access
during the dispensing.
2. The apparatus of claim 1, comprising a movable member (148)
20 defining at least a partial boundary of said closeable dispense space, said
movable member (148) being capable of assuming a first position to achieve
said open state, and a second position to achieve said closed state.
3. The apparatus of claim 2, further comprising locking means (156)
coupled to said controller and associated with said movable member, said
25 locking means being adapted, under control by said controller, to selectively
prevent and allow said movable member (148) to move from its second
position towards its first position.
4. The apparatus of claim 2 or 3, wherein said movable member
comprises a drawer (148), wherein said first position is a position where said
30 drawer (148) is extended outwardly from said cabinet, and wherein said
second position is a position where said drawer (148) is retracted inside said
cabinet (102).
5. The apparatus of claim 2, 3 or 4, comprising a first sensor coupled to
said controller and positioned and adapted to detect when said movable
35 member (102) is in said second position.
6. The apparatus of any preceding claim, comprising a second sensor
(164) coupled to said controller and positioned and adapted to detect the

presence of said portable coin receptacle (146) within said closeable dispense space.

7. The apparatus of any preceding claim, comprising first and second dispensers (142) for first and second types of coins to be dispensed, wherein
5 said portable coin receptacle is a cash till (146), said cash till (146) having first and second compartments adapted to receive coins of said first and second types from said first and second dispensers (142), respectively.

8. The apparatus of any preceding claim, comprising first and second dispensers (142) for first and second types of coins to be dispensed, the
10 apparatus further comprising a coin acceptance module (126) adapted to receive and sort a deposited mass of coins into said first and second dispensers (142) for buffering therein, the apparatus (100) thus constituting or forming part of a cash recycling system.

9. The apparatus of claim 8, further comprising a closeable storage
15 space (170) within said cabinet, separated from said closeable dispense space and being adapted to receive a transport container, wherein said controller is configured to control at least one of said first and second dispensers (142) to discharge one or more coins to said transport container when placed in said closeable storage space.

20 10. The apparatus of claim 9, comprising buffer capacity determining means for each dispenser (142), said controller being adapted to detect when a current buffer capacity of a particular dispenser (142) exceeds a threshold value and in response control the particular dispenser to discharge a specific number of coins to be received in the transport container.

25 11. Apparatus according to claim 10, wherein the controller is adapted to detect that a coin as processed by the coin acceptance module (126) and destined to a particular dispenser (142) causes the current buffer capacity of said particular dispenser to exceed said threshold value, and in response control said particular dispenser (142) to discharge a coin to the transport
30 container.

12. The apparatus of claim 9, 10 or 11, wherein the closeable storage space is formed by a movable and closeable transport container drawer (170), which in an opened, extended position is adapted to receive the transport container and in a closed, retracted position is adapted to
35 accommodate said transport container and prevent it from unauthorized external access.

13. The apparatus of any of claims 9-12, wherein said closeable dispense space is positioned between said dispensers and said closeable storage space, a passage being formed from a coin output end (144) of said dispensers (142), through said closeable dispense space when no portable coin receptacle (146) is present therein, to a coin input end of said closeable storage space (170).

14. The apparatus of claim 13, further comprising access restricting means (172) positioned between said closeable dispense space and said closeable storage space, said access restricting means (172) preventing visual and human physical access from said closeable dispense space (148) into said closeable storage space (170) while permitting coins to pass therethrough into the transport container.

15. A coin deposit and dispensing apparatus (100) comprising a cabinet (102) serving as an apparatus housing for said apparatus (100),

a controller,
a coin acceptance module (126) adapted to receive and process a deposited mass of coins, and

one or more dispensers (142) for one or more types of coins to be dispensed,

wherein, in a deposit operation, said dispensers (142) are adapted to receive said deposited and processed mass of coins for buffering therein, and

wherein, in a dispensing operation, said dispensers (142) are adapted to dispense a specific composition of coins, under control by the controller, to a portable coin receptacle (146) at a dispense location, **characterized by**

a closeable storage space (170) positioned within said cabinet at a storage location different from said dispense location, said closeable storage space being adapted to receive a transport container, wherein said controller is configured to control at least one of said first and second dispensers (142) to discharge one or more coins to said transport container when placed in said closeable storage space (170).

16. The apparatus of claim 15, comprising buffer capacity determining means for each dispenser (142), said controller being adapted to detect when a current buffer capacity of a particular dispenser (142) exceeds a threshold value and in response control the particular dispenser (142) to discharge a specific number of coins to be received in the transport container.

17. Apparatus according to claim 16, wherein the controller is adapted to detect that a coin as processed by the coin acceptance module (126) and destined to a particular dispenser (142) causes the current buffer capacity of said particular dispenser to exceed said threshold value, and in response
5 control said particular dispenser (142) to discharge a coin to the transport container.

18. The apparatus of any of claims 15-17, wherein the closeable storage space is formed by a movable and closeable transport container drawer (170), which in an opened, extended position is adapted to receive the
10 transport container and in a closed, retracted position is adapted to accommodate said transport container and prevent it from unauthorized external access.

19. The apparatus of any of claims 15-18, the apparatus having a closeable dispense space (148) at said dispense location within said cabinet
15 (102) for receiving the portable coin receptacle (146) during said dispense operation, wherein said closeable dispense space (148) is positioned between said dispensers (142) and said closeable storage space (170), a passage being formed from a coin output end (144) of said dispensers (142), through said closeable dispense space when no portable coin receptacle
20 (146) is present therein during said deposit operation, to a coin input end of said closeable storage space.

20. The apparatus of claim 19, further comprising access restricting means (172) positioned between said closeable dispense space (148) and said closeable storage space (170), said access restricting means preventing
25 visual and human physical access from said closeable dispense space (148) into said closeable storage space (170) while permitting coins to pass therethrough into the transport container.

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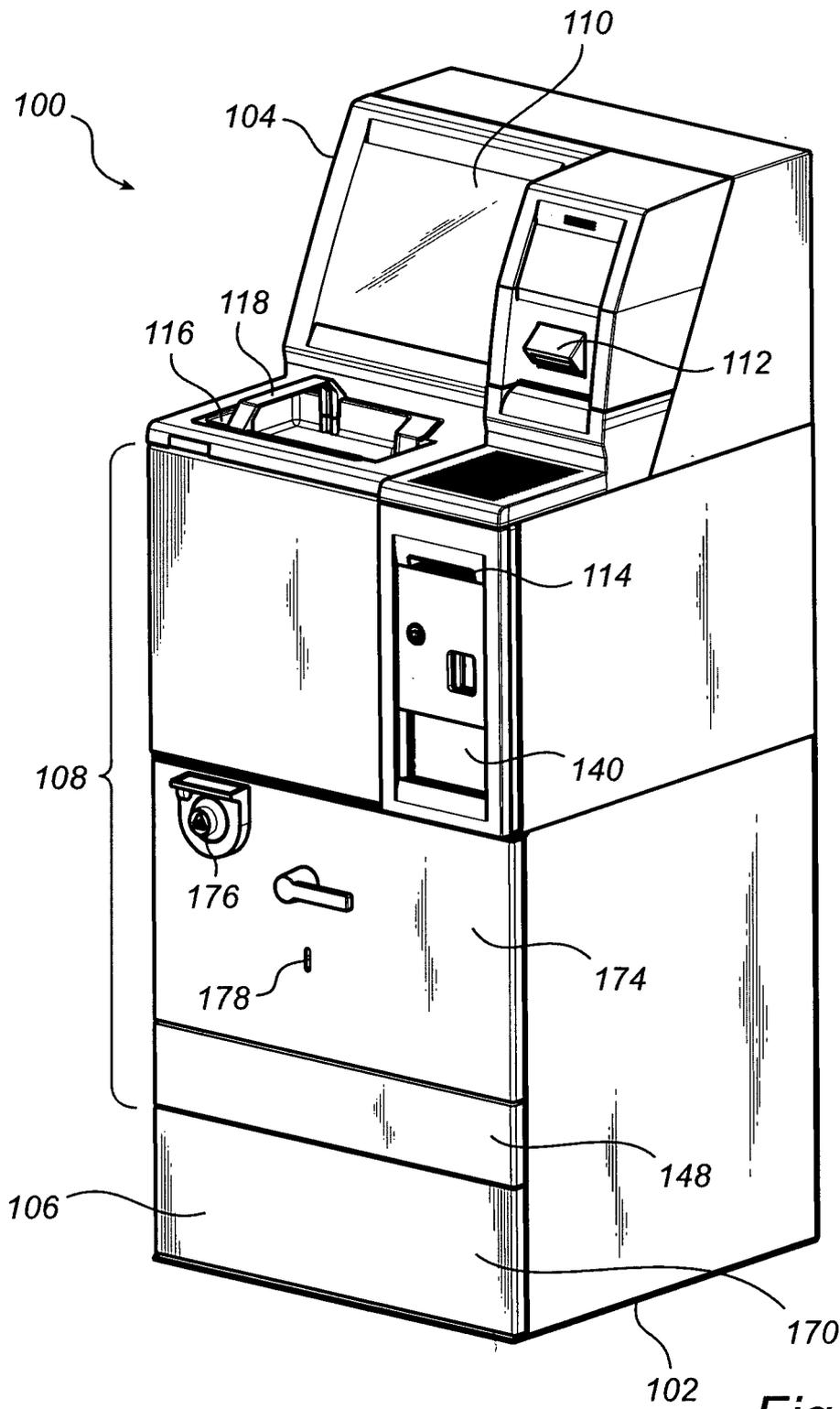


Fig. 1

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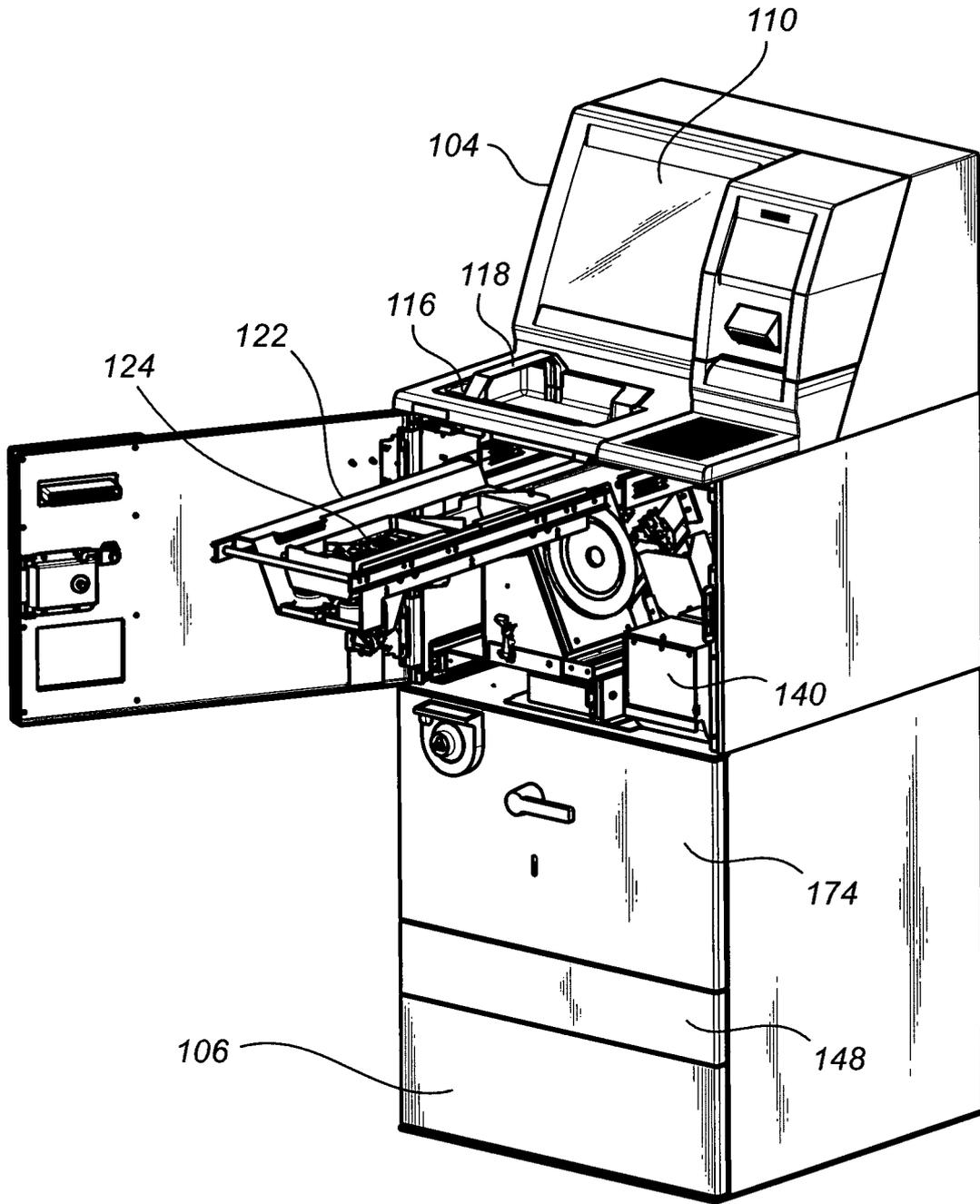


Fig. 2

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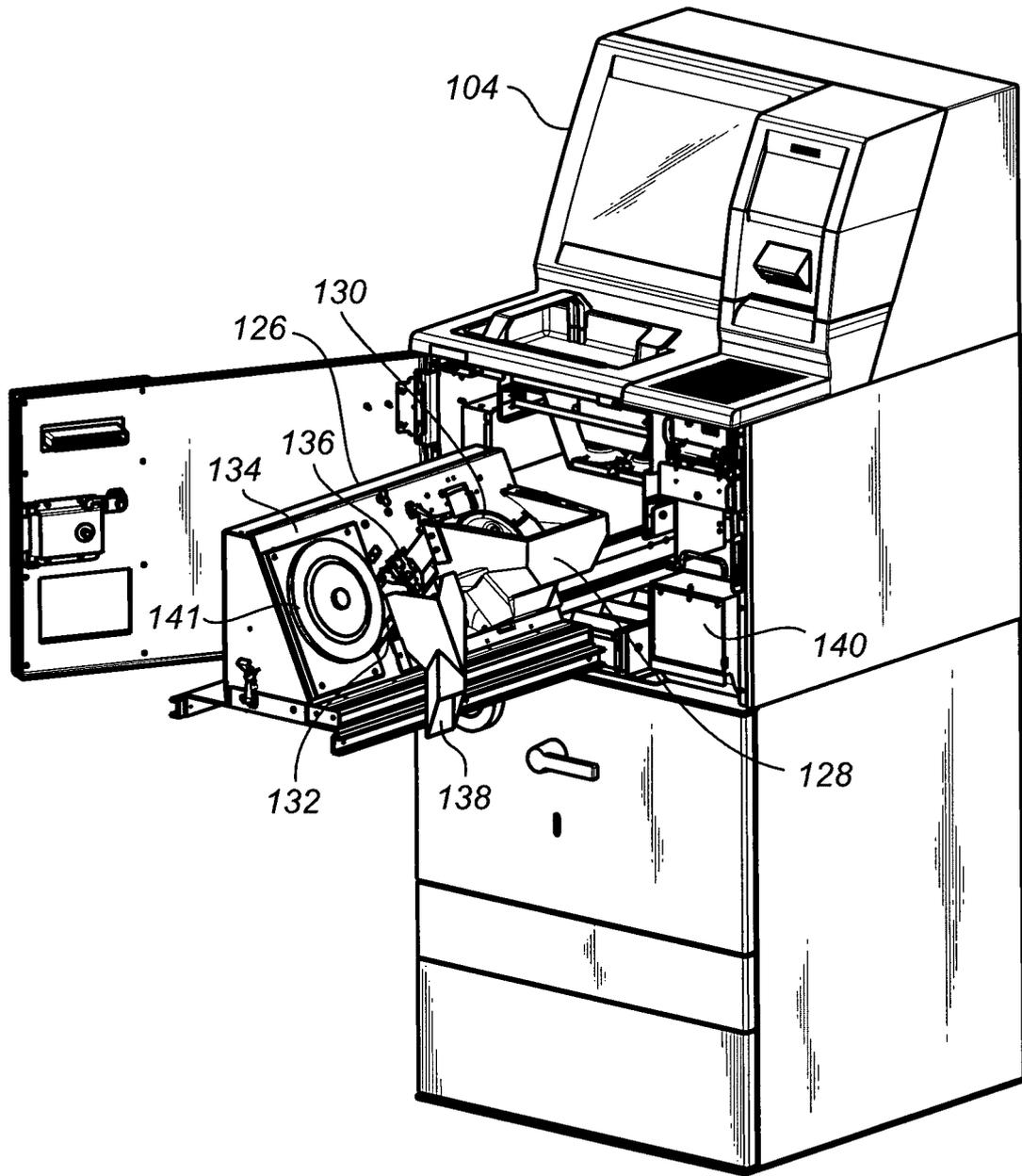


Fig. 3

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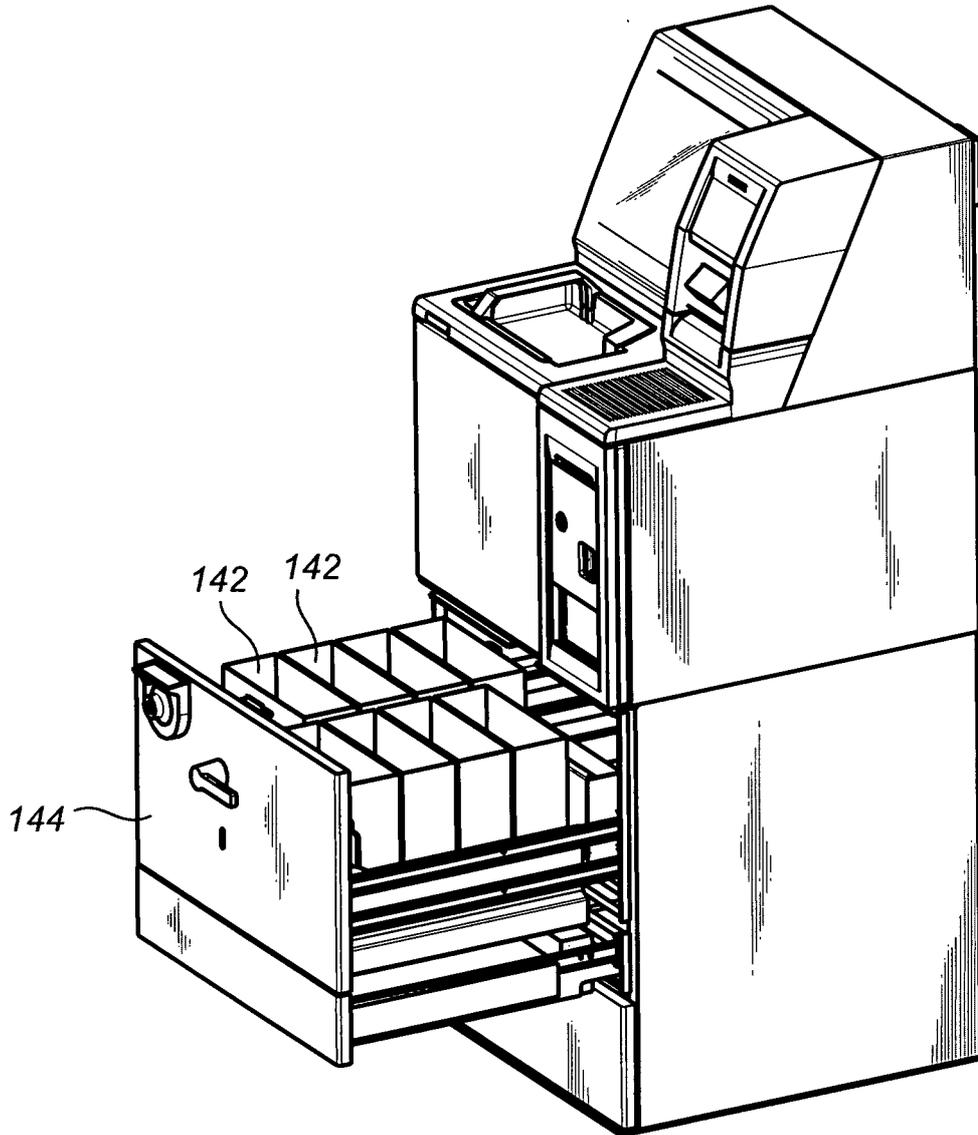


Fig. 4

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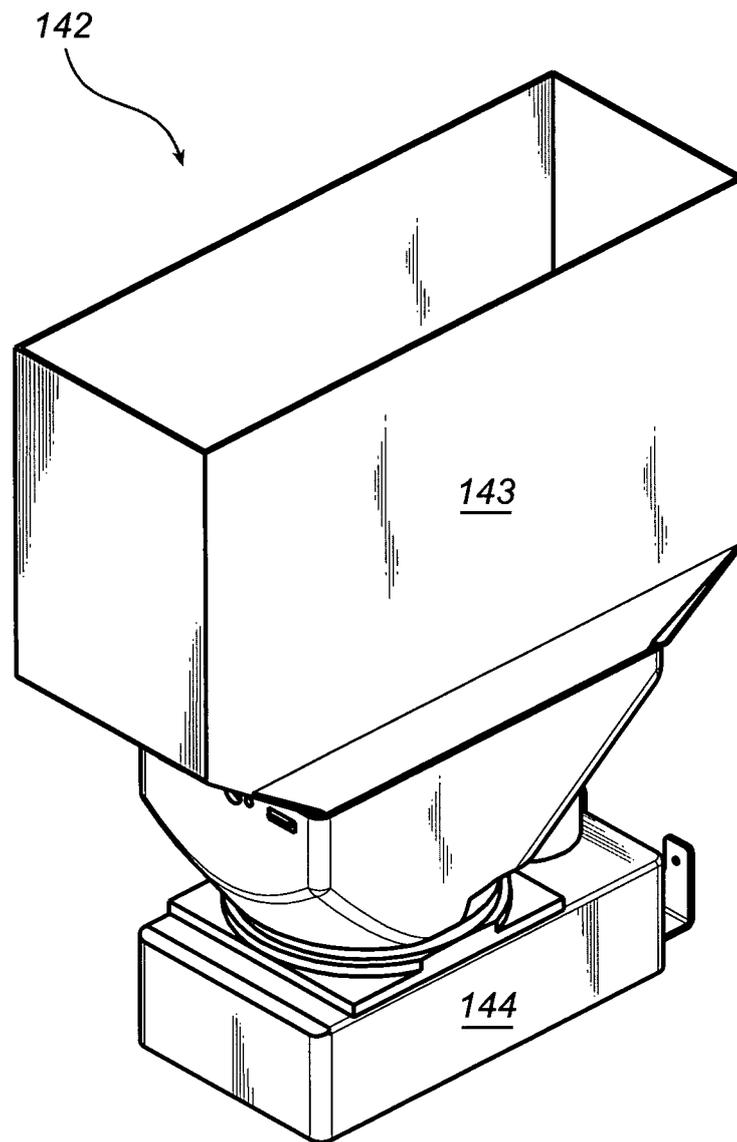


Fig. 5

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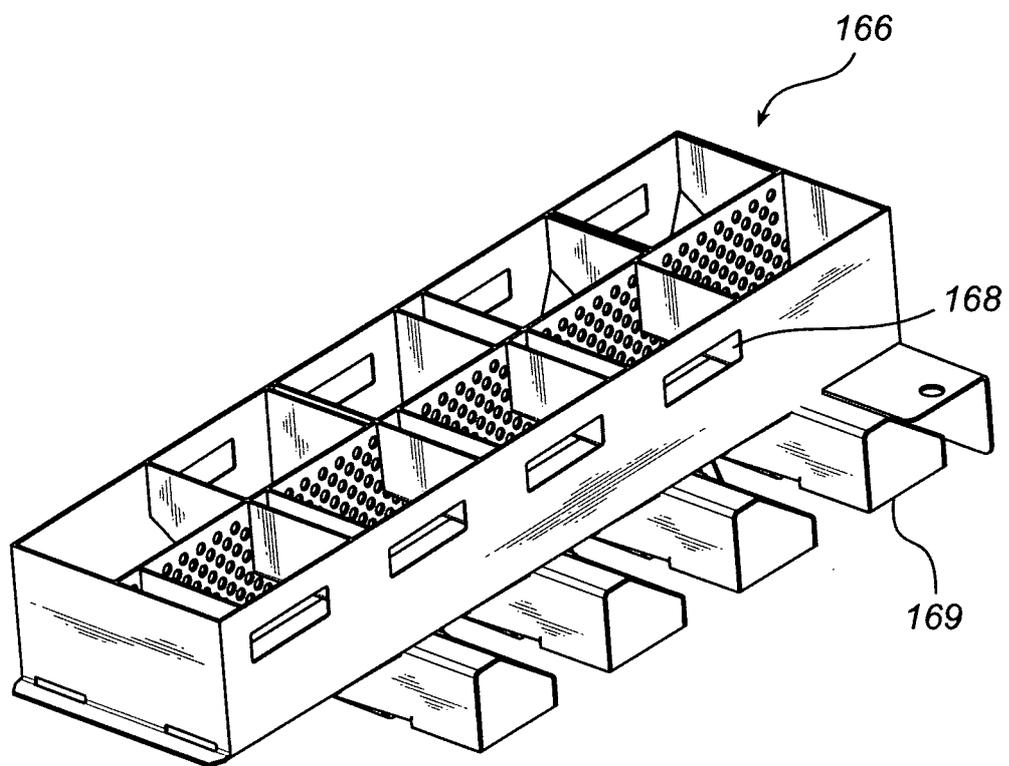


Fig. 6

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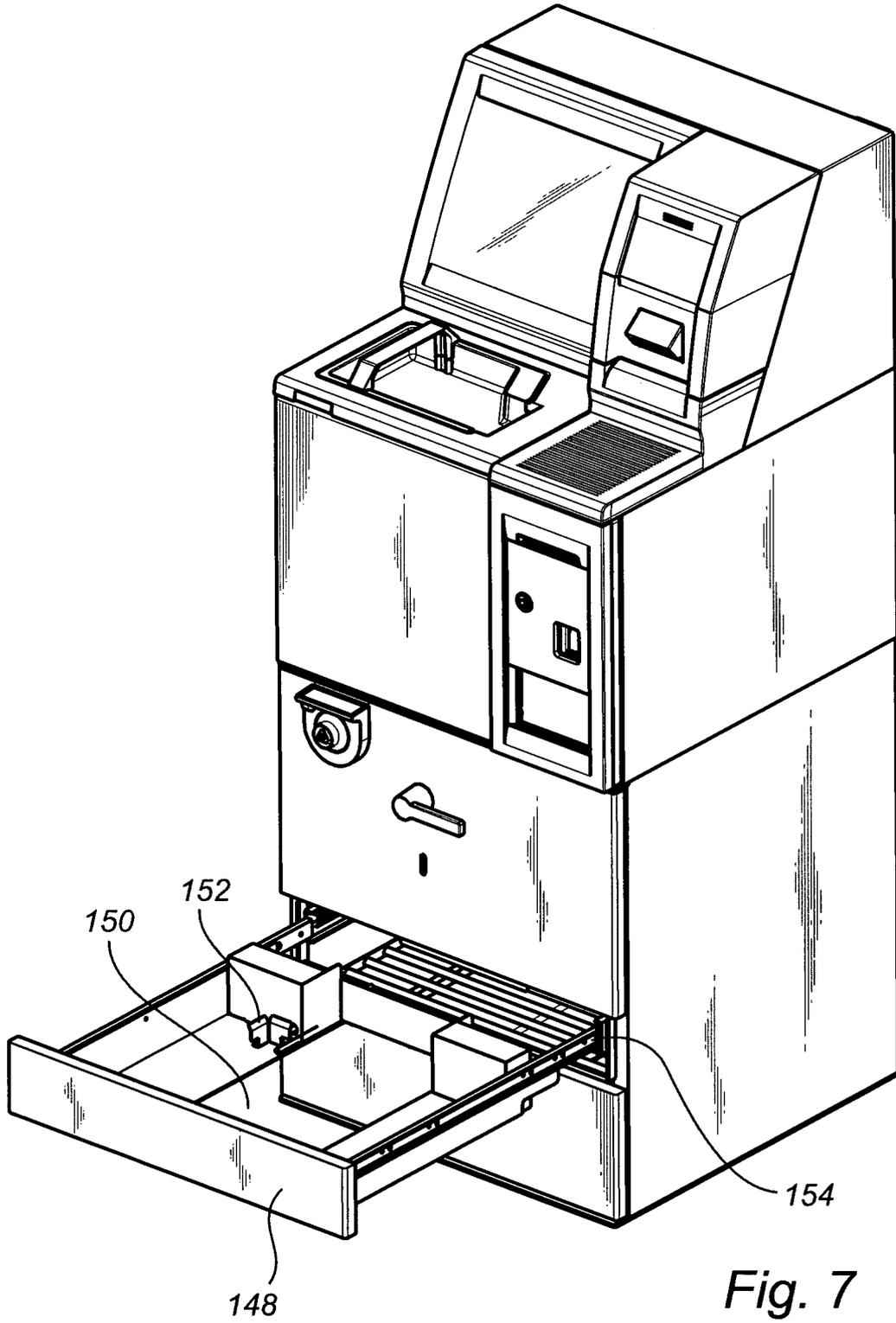


Fig. 7

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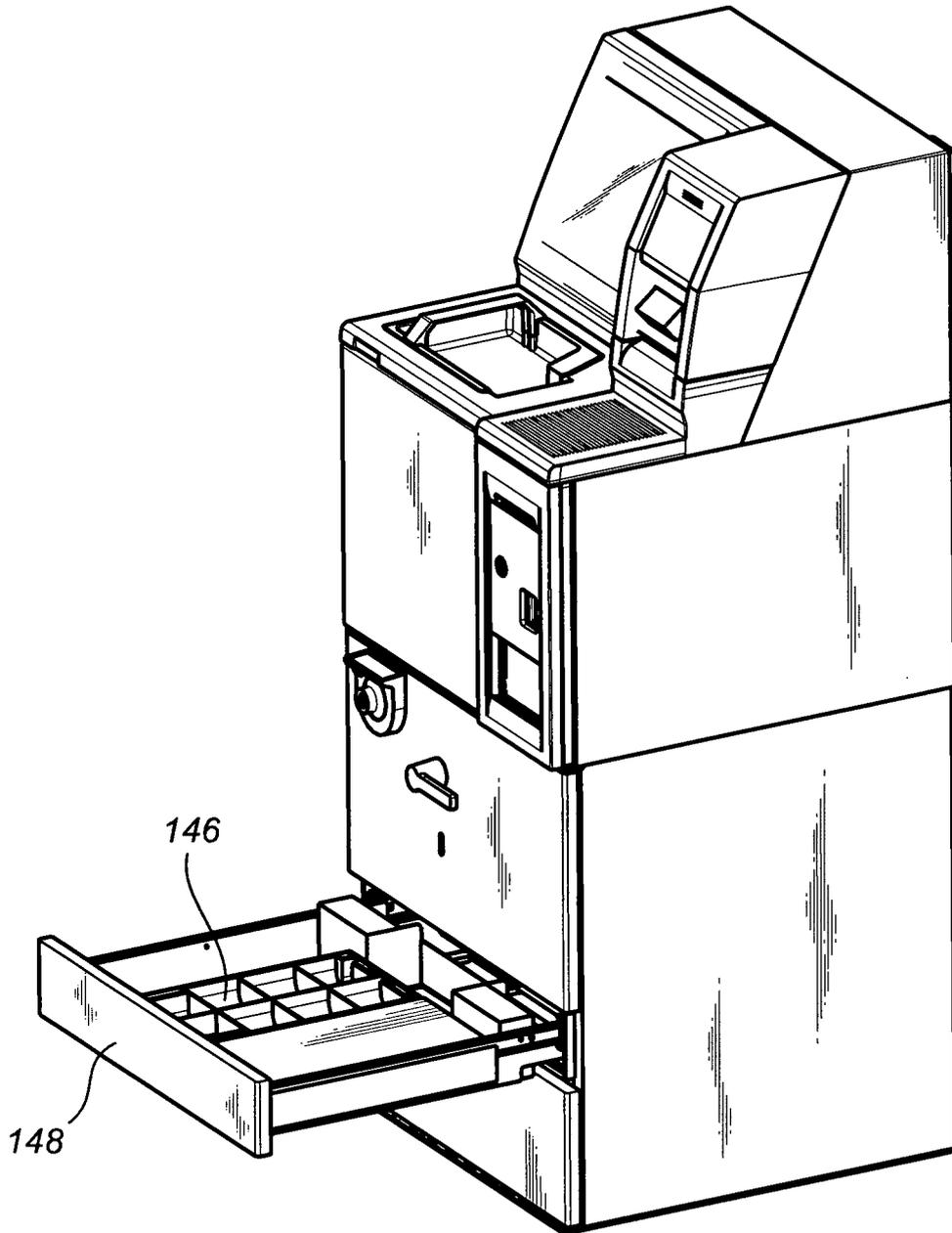


Fig. 8

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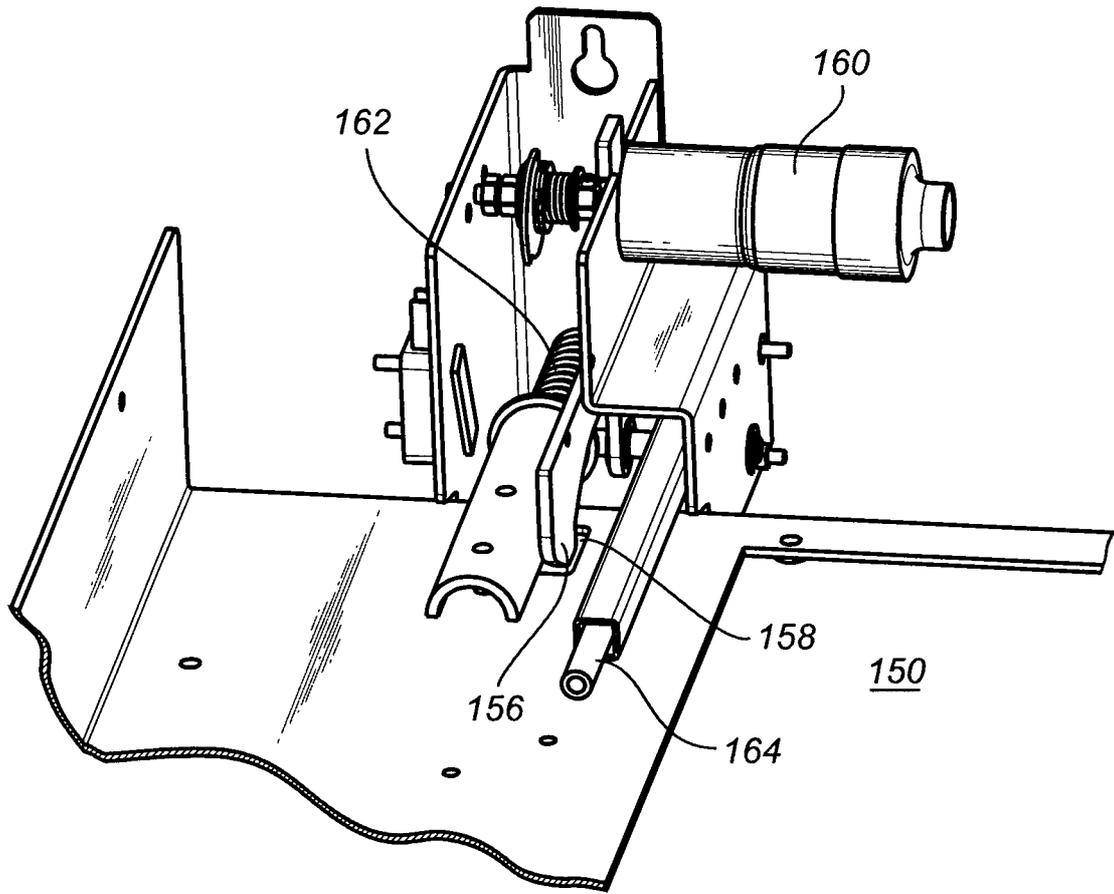


Fig. 9

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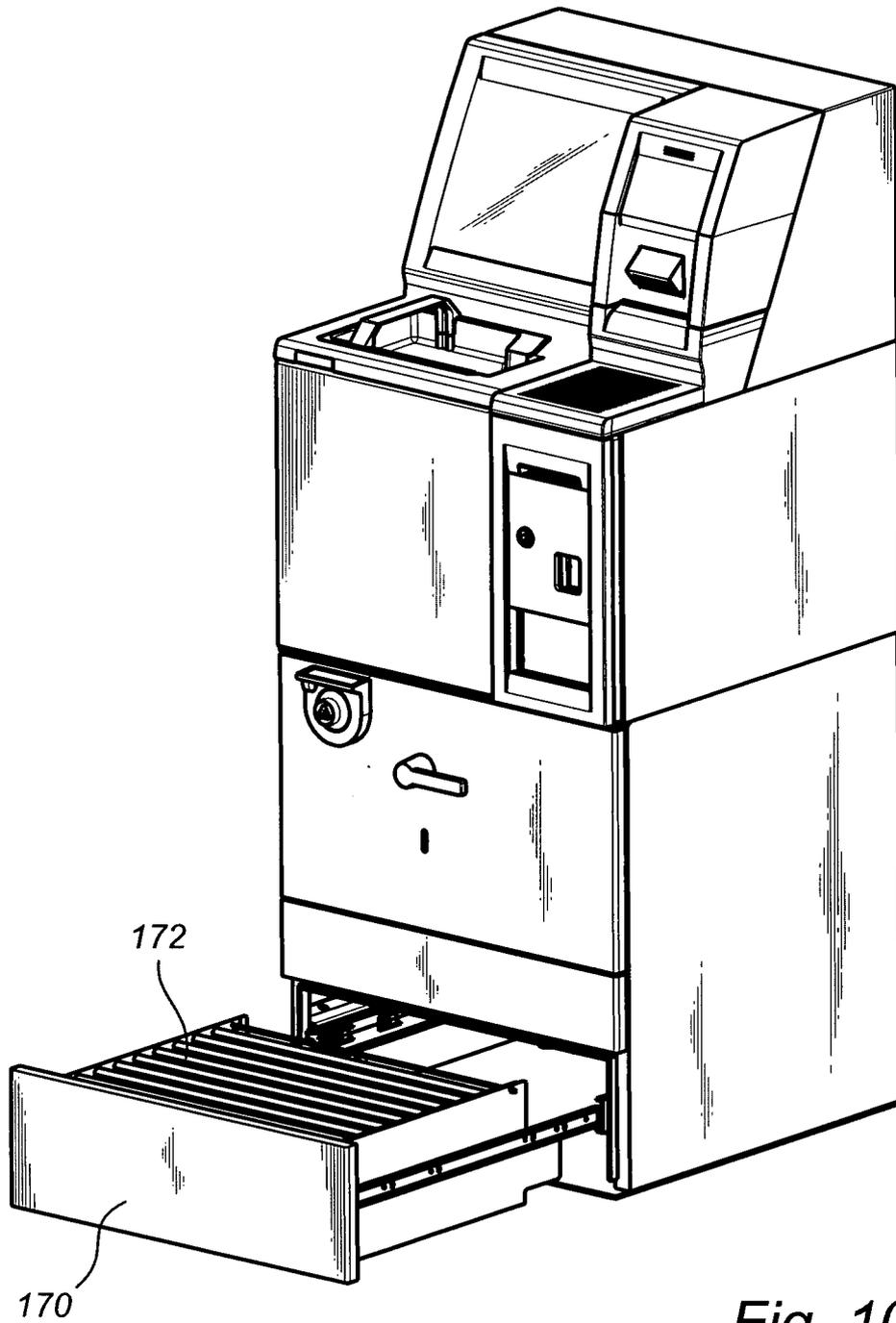


Fig. 10

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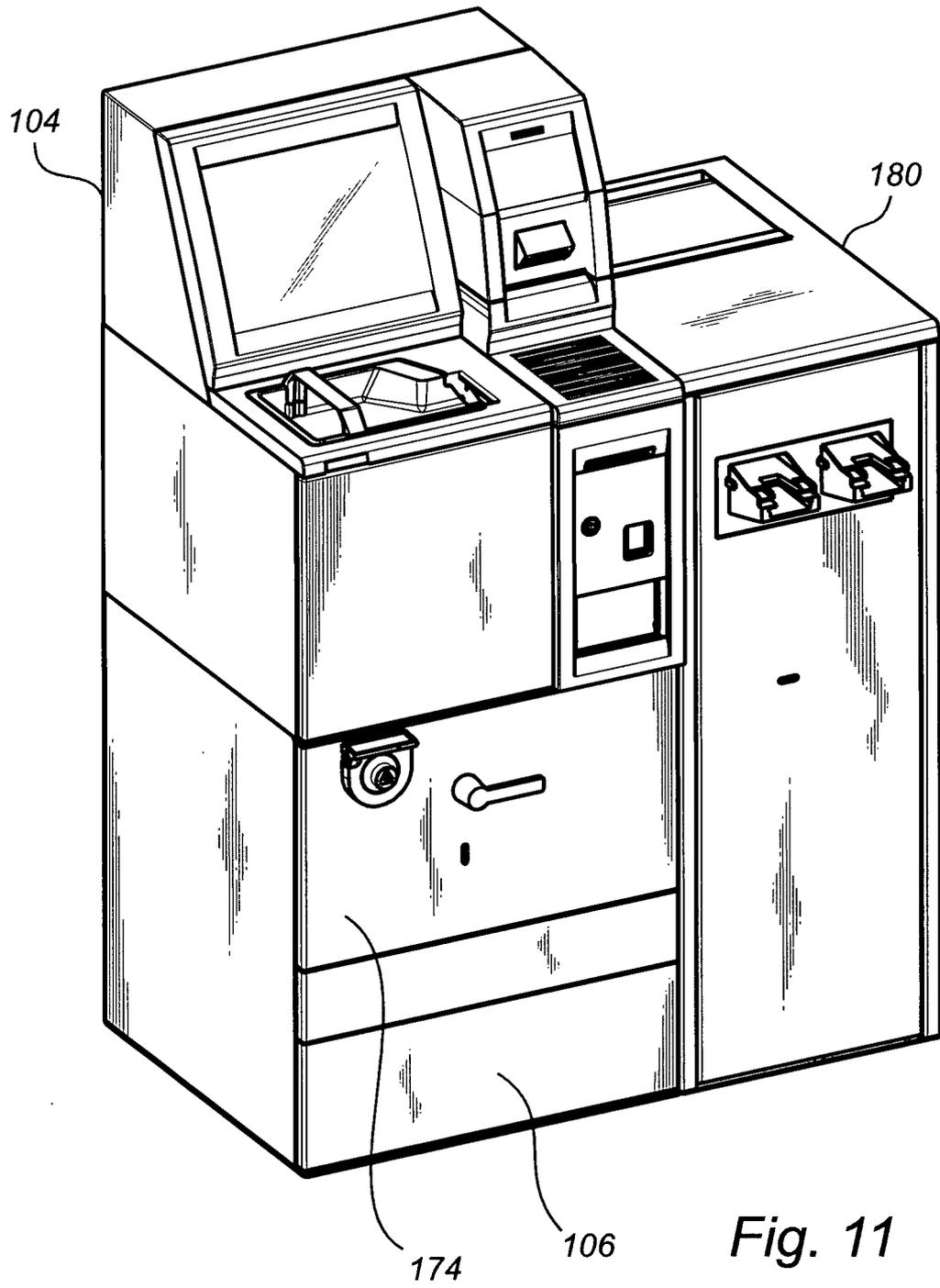


Fig. 11

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: G07D, G07G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
SE, DK, FI, NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPQ-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	--	15-17,18-19
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Further documents are listed in the continuation of Box C. See patent family annex.

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5 December 2007

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	WO 2005104046 A1 (DE LA RUE CASH SYSTEMS INC.), 3 November 2005 (03.11.2005), figure 2, paragraphs (0036), (0056) --	15
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A	WO 2004081735 A2 (DIEBOLD, INCORPORATED), 23 Sept 2004 (23.09.2004), see the whole document -- -----	1-20

International patent classification (IPC)

G07D 9/00 (2006.01)

G07D 3/00 (2006.01)

G07F 9/06 (2006.01)

G07G 1/00 (2006.01)

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Cited literature, if any, will be enclosed in paper form.

INTERNATIONAL SEARCH REPORT
Information on patent family members

01/09/2007

International application No.

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