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(54) **Device for opening a container**

Vorrichtung zum Öffnen eines Behälters

Dispositif d'ouverture d'un conteneur

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Description

[0001] The present invention relates to a device for opening a container.

[0002] The device of the present invention is particularly suitable for opening security cases and, in the following, will be described with reference to its use in opening such security cases. However, the device of the present invention is not limited to such a use and can be used to open a variety of containers having a base with a lid hinged thereto.

[0003] When collected from or delivered to shops, factories, banks, post offices and the like, cash and similar valuable commodities are often transported in a standard security case. The case includes a base with a hinged lid and is typically formed of a tough plastics material. The lid is lockable to the base by means of an electronic mechanism and often a physical locking mechanism.

[0004] Currently, when such a security case is to be emptied at, for example, a bank or a vehicle used to transport the cash or other valuable commodity, the case is opened by the carrier of the case who has the necessary keys to open the electronic and physical locking mechanisms of the case. The carrier thus has full access to the contents of the case.

[0005] For security reasons, it is desirable that, when the case is to be opened, the carrier of the case does not come into contact with the contents of the case.

[0006] According to the present invention, there is provided a device for opening a container of the type having a base with a lid hinged thereto and means for locking the base to the lid, said device comprising:

first means for receiving the container;
second means for holding at least a part of the container in a predetermined orientation; and
third means for opening the container,

the arrangement being such that receipt of a container by said first means causes said third means to open the container, the device being characterised in that said first means includes an aperture and a surface positioned beyond the aperture to receive the container for sliding movement thereover, said second means comprising a crossbar for engaging the base of the container to hold it in a predetermined orientation and move therewith, said crossbar extending over at least a part of said surface so as to be substantially perpendicular to the direction in which said container, in use, slides over said surface and being linked by linkage means to said third means, said third means including a cross piece for engaging said lid, said linkage means being operable such that said cross piece is movable between a first position above said crossbar and in which, in use, said container is closed and a second position in which, in use, said container is open.

[0007] A device according to the preamble of the pre-

ceding paragraph is known from German Offenlegungsschrift No. 1,497,466 which is concerned primarily with opening of film cassettes where avoidance of exposure to light on opening rather than security is a major concern.

[0008] The device of the present invention enables a container to be opened automatically when it is received by the first means. Thus, the carrier of the container is not involved with the opening of the container and therefore does not have any contact with the contents thereof. The contents of the case may be unloaded automatically by gravity so that there is no need for anyone to come into contact with them.

[0009] By virtue of its position, the second means is able to detect when a container is received by the first means and causes the third means to open the case. The second means moves when a container is received by the first means, movement of the second means causing the third means to open the container. The second means may be physically linked to the third means such that movement of said second means causes said third means to open the container. In this embodiment, physical loading of the container into the device causes the detection of the device and hence causes it to be opened.

[0010] Alternatively, the link between the second means and the third means may be, for example, electronic.

[0011] The first means includes an aperture and a surface, the container, in use, being passed through said aperture and slid over the surface to be received by the first means. Preferably, the device is constructed such that the interior of the container is contained within the device when the container is opened, thereby preventing access to the interior of the container from the aperture. Such a construction further ensures that the carrier of the container does not have any contact with the contents thereof.

[0012] The second means is arranged to hold the base in a predetermined orientation and the third means is arranged to open the lid when a container is received by the first means.

[0013] In greater detail, the second means comprises a crossbar for engaging said base, said crossbar extending above at least a part of said surface substantially perpendicular to the direction in which said case is, in use, slid over said surface and being arranged so as to move substantially in the direction of travel of said container. Preferably, the crossbar is biased to move in a direction substantially opposite the direction of travel of said container. The crossbar may then include a plate for separating said base and said lid.

[0014] The device may further comprise means for unlocking said means for locking the container.

[0015] The device may also further comprise means for securing said container in an open position.

[0016] For a better understanding of the invention, and to show how the same may be carried into effect,

reference will now be made, by way of example only, to the accompanying drawings, in which:-

Figure 1 is a schematic side view of a device in accordance with the present invention; and
Figure 2 is a schematic front view of the device of Figure 1.

[0017] Referring to the drawings, device 10 is for automatically opening a security case 11 to facilitate loading and unloading thereof. Such a device may be located in the wall of a safe in, for example, a bank or in the side of a vehicle, so that a security case can be inserted from one side of the wall, and the contents of the case can be accessed from the other side of the wall.

[0018] A standard security case 11 comprises a base 12 and a lid 13 hinged at hinge 13a. A handle (not shown) is included at the end of case 11 opposite hinge 13a. Base 12 and lid 13 are lockable together by means of an electronic locking device and catches adjacent the handle (not shown).

[0019] Device 10 comprises a frame 14 of sufficient rigidity to withstand the forces exerted on it during operation. Supported within frame 14 is an inclined open tray 15 for receiving (and therefore slightly wider than) the security case 10. A crossbar 16 is supported within tray 15 with either end thereof being located in an inclined slot 17 cut into the sides of tray 15 parallel to the base thereof. Crossbar 16 can slide up and down along slots 17, but is urged to the upper end of slots 17 by means of springs 18. Crossbar 16 is of square section to prevent any rotation thereof and includes a plate 19 (see Fig. 2), the purpose of which will be described below.

[0020] Each end of crossbar 16 has attached thereto a linkage arm 20a, 20b. The upper end of each linkage arm is rotatably attached to a pivot member 21a, 21b (not shown) which, in turn, is fixed to a pivot arm 22a, 22b. Connecting the pivot arms 22a, 22b is a pivot cross piece 23. Pivot arms 22a, 22b and pivot cross piece 23 form a pivot cradle. Pivot cross piece 23 rests slightly above crossbar 16 and includes a pair of key pins 24 for engaging the catches on the security case 11.

[0021] It will be appreciated that movement of crossbar 16 down slots 17 will cause the pivot cradle to pivot upwardly about a pivot point 25 by means of the linkage arms 20a, 20b and pivot members 21.

[0022] Device 10 also includes a latching device 26 which is positioned in frame 14 to secure the lid 13 of the case 11 when the case is opened. In addition, a roller bar 27 extends across frame 14, the distance between roller bar 27 and the bottom of tray 15 being slightly greater than the height of a security case.

[0023] In use, case 11 is inserted, handle first, into tray 15 and a force is applied to it in the direction of arrow A. This causes a proximity switch (not shown) to allow an electronic switch to release the electronic locking device of the case in a known manner. In addition, the end of

the case having the handle thereon is caused to come into contact with crossbar 16 and pivot cross piece 23, base 12 contacting crossbar 16 and lid 13 contacting pivot cross piece 23.

[0024] Contact with pivot cross piece 23 causes the catches on the case 11 to be disengaged by key pins 24. Contact with the crossbar 16 causes plate 19 to separate base 12 from lid 13 of case 11.

[0025] Further application of force substantially in the direction of arrow A (see Fig. 1) pushes crossbar 16 down slots 17. This causes the pivot cradle to rotate about pivot point 25. Because lid 13 is in engagement with pivot crosspiece 23, lid 13 is opened upwardly away from base 12, rotating about hinge 13a. Base 12 is held on tray 15 by plate 19 of crossbar 16.

[0026] Lid 13 is secured open by latching device 26. The positions of the pivot cradle and the crossbar 16 when the case is fully inserted are indicated by the dotted lines in the drawings. Unloading (or unloading) of the contents of the case can then take place. Preferably, unloading is by means of gravity, the contents of the case dropping into a safe.

[0027] After completion of loading/unloading operations, the case 11 is withdrawn from device 10. This causes lid 13 to be released from latching device 26. Springs 18 then return crossbar 16 to its rest position. This also returns the pivot cradle to its rest position and pushes the case 11 out of tray 15 in a movement opposite to the insertion thereof.

[0028] The roller bar 27 ensures that the lid 13 of the case 11 is fully closed as the case 11 is removed from the device 10, thereby causing the catches on the case to engage. Removal of the case 11 from the device 10 causes the electronic locking device of the case to be locked by an electronic switch in a known manner.

[0029] In this way, the person who inserts the case into the device has no contact with the contents of the case. The case is automatically opened by its insertion into the device, allowing it to be loaded or unloaded more efficiently than if a separate opening operation is needed.

Claims

1. A device (10) for opening a container (11) of the type having a base (12) with a lid (13) hinged thereto and means for locking the base (12) to the lid (13), said device (10) comprising:

first means (15) for receiving the container (11);
second means (16) for holding at least a part of the container (11) in a predetermined orientation; and
third means (22a,22b,23) for opening the container,

the arrangement being such that receipt of a

- container (11) by said first means (15) causes said third means (22a,22b,23) to open the container (11), the device being characterised in that said first means (15) includes an aperture and a surface positioned beyond the aperture to receive the container (11) for sliding movement thereover, said second means comprising a crossbar (16) for engaging the base of the container to hold it in a predetermined orientation and move therewith, said crossbar (16) extending over at least a part of said surface so as to be substantially perpendicular to the direction in which said container (11), in use, slides over said surface and being linked by linkage means (22a, 22b) to said third means, said third means including a cross piece (23) for engaging said lid (13), said linkage means being operable such that said cross piece is movable between a first position above said crossbar and in which, in use, said container is closed and a second position in which, in use, said container is open.
2. A device as claimed in claim 1, in which said third means comprises a pivot cradle which includes said cross piece (23) for engaging the lid (13), the pivot cradle being pivotable such that the cross piece (23) is movable between the first position above the crossbar and in which, in use, the container is closed and a second position in which, in use, the container (11) is open.
3. A device as claimed in claim 2, wherein the linkage means (22a, 22b, 23) provides a physical linking of the second means and the third means.
4. A device as claimed in any preceding claim, which is constructed such that the interior of the container (11) is contained within the device (10) when the container (11) is opened, thereby preventing access to the interior of the container via the aperture.
5. A device as claimed in any preceding claim, wherein said surface is inclined downwardly from said aperture.
6. A device as claimed in any preceding claim, wherein said crossbar (16) is biased to move in a direction substantively opposite the direction of travel of the container.
7. A device as claimed in claim 6, wherein said crossbar (16) includes a plate (19) for separating said base (12) and said lid (13).
8. A device as claimed in any preceding claim, further comprising means (24) carried by the said cross piece (23) for unlocking the means for locking the base (12) to the lid (13) of the container.

9. A device as claimed in any preceding claim, further comprising means (26) for securing the container (11) in an open position.

Patentansprüche

1. Vorrichtung (10) zum Öffnen eines Behälters des Typs (11) mit einem Grundteil (12) und einer daran angelenkten Klappe (13) sowie einer Vorrichtung zum Verschließen des Grundteils (12) mit der Klappe (13), beinhaltend

eine erste Einrichtung (15) zur Aufnahme des Behälters (11);

eine zweite Einrichtung (16) zum Halten mindestens eines Teils des Behälters (11) in einer vorgegebenen Ausrichtung; und

eine dritte Einrichtung (22a, 22b, 23) zum Öffnen des Behälters, wobei

die Anordnung derart ist, dass die Aufnahme des Behälters (11) von der ersten Einrichtung (15) die dritte Einrichtung (22a, 22b, 23) veranlasst, den Behälter (11) zu öffnen, wobei die Vorrichtung dadurch gekennzeichnet ist, dass die erste Einrichtung (15) eine Öffnung aufweist sowie eine jenseits der Öffnung liegende Fläche zur Aufnahme des Behälters (11) in einer Rutschbewegung darüber,

die zweite Einrichtung einen Querbalken (16) aufweist zum Eingriff mit dem Behältergrundteil, so dass dieser in einer vorgegebenen Ausrichtung gehalten und mitbewegt wird, wobei der Querbalken (16) sich über mindestens einen Teil der Fläche erstreckt und im Wesentlichen senkrecht zu der Richtung steht, in der der Behälter (11), wenn er benutzt wird, über die Fläche rutscht und dabei verbunden ist durch Verbindungseinrichtungen (22a, 22b) mit der dritten Einrichtung,

die dritte Einrichtung die ein Querstück (23) aufweist zum Eingriff mit der Klappe (13),

wobei die Verbindungseinrichtung so betreibbar ist, dass das Querstück bewegbar ist zwischen einer ersten Position über dem Querbalken, in der bei Gebrauch der Behälter geschlossen ist, und einer zweiten Position, in der bei Gebrauch der Behälter offen ist.

2. Vorrichtung nach Anspruch 1, in der die dritte Einrichtung einen Drehsattel enthält, der beinhaltet das Querstück (23) zum Eingriff mit der Klappe (13), wobei der Drehsattel derart verschwenkbar ist, dass das Querstück (23) zwischen einer ersten Position über dem Querbalken, in der bei Gebrauch der Behälter geschlossen ist, und einer zweiten Position, in der bei Gebrauch der Behälter (11) offen ist, bewegbar ist.

3. Vorrichtung nach Anspruch 2, wobei die Verbindungseinrichtung (22a, 22b, 23) eine mechanische Verbindung der zweiten Einrichtung mit der dritten Einrichtung bereitstellt. 5
4. Vorrichtung nach irgendeinem vorhergehenden Anspruch, die so konstruiert ist, dass das Innere des Behälters (11) in der Vorrichtung (10) aufgenommen ist, ist der Behälter (11) offen, so dass ein Zutritt zum Inneren des Behälters über die Öffnung verhindert ist. 10
5. Vorrichtung nach irgendeinem vorhergehenden Anspruch, wobei die Oberfläche von der Öffnung ab nach unten geneigt ist. 15
6. Vorrichtung nach irgendeinem vorhergehenden Anspruch, wobei der Querbalken (16) so vorgespannt ist, dass er in einer Richtung im Wesentlichen entgegengesetzt der Wegrichtung des Behälters laufen kann. 20
7. Vorrichtung nach Anspruch 6, wobei der Querbalken (16) eine Platte (19) zum Trennen des Grundteils (12) von der Klappe (13) beinhaltet. 25
8. Vorrichtung nach irgendeinem vorhergehenden Anspruch, die zudem eine Einrichtung (24) enthält, getragen von dem Querstück (23), zum Aufmachen der Einrichtung zum Verschließen des Grundteils (12) mit der Klappe (13) des Behälters. 30
9. Vorrichtung nach irgendeinem vorhergehenden Anspruch, zudem beinhaltend eine Einrichtung (26), die den Behälter (11) sichert, wenn er in offenem Zustand ist. 35

Revendications

1. Dispositif (10) pour ouvrir un récipient (11) du type doté d'une base (12) sur laquelle est articulé un couvercle (13) et de moyens pour verrouiller la base (12) sur le couvercle (13), ledit dispositif (10) comprenant :

des premiers moyens (15) destinés à recevoir le récipient (11) ;

des deuxièmes moyens (16) destinés à maintenir au moins une partie du récipient (11) selon une orientation prédéterminée, et

des troisièmes moyens (22a, 22b, 23) destinés à ouvrir le récipient,

l'agencement étant tel que la réception d'un récipient (11) par lesdits premiers moyens (15) déclenche l'ouverture du récipient (11) par lesdits troisièmes moyens (22a, 22b, 23), le dispositif étant caractérisé en ce que lesdits pre-

miers moyens (15) comportent une ouverture et, au-delà de ladite ouverture, une surface pour recevoir le récipient (11) selon un mouvement de glissement sur cette dernière, lesdits seconds moyens comportant une barre transversale (16) pour coopérer avec la base du récipient, afin de maintenir ladite base dans une orientation prédéterminée et de se déplacer solidairement avec cette dernière, ladite barre transversale (16) s'étendant sur au moins une partie de ladite surface de manière à être sensiblement perpendiculaire à la direction dans laquelle ledit récipient (11) glisse en fonctionnement sur ladite surface et étant reliée par des moyens de liaison (22a, 22b) auxdits troisièmes moyens, lesdits troisièmes moyens comportant une pièce transversale (23) pour coopérer avec ledit couvercle (13), lesdits moyens de liaison étant actionnables de telle sorte que ladite pièce transversale puisse se déplacer entre une première position située au-dessus de ladite barre transversale et dans laquelle, en fonctionnement, ledit récipient est fermé et une deuxième position dans laquelle, en fonctionnement, ledit récipient est ouvert.

2. Dispositif selon la revendication 1, caractérisé en ce que lesdits troisièmes moyens comprennent un élément pivotant comportant ladite pièce transversale (23) pour coopérer avec le couvercle (13), l'élément pivotant pouvant pivoter de telle sorte que la pièce transversale (23) puisse se déplacer entre la première position située au-dessus de la barre transversale et dans laquelle, en fonctionnement, le récipient est fermé, et une deuxième position dans laquelle, en fonctionnement, le récipient (11) est ouvert.

3. Dispositif selon la revendication 2, caractérisé en ce que les moyens de liaison (22a, 22b, 23) assurent une liaison physique des deuxièmes et des troisièmes moyens.

4. Dispositif selon l'une quelconque des revendications précédentes, caractérisé en ce qu'il est conçu de telle sorte que l'intérieur du récipient (11) soit contenu à l'intérieur du dispositif (10) lorsque le récipient (11) est ouvert, empêchant ainsi tout accès à l'intérieur du récipient via l'ouverture.

5. Dispositif selon l'une quelconque des revendications précédentes, caractérisé en ce que ladite surface est inclinée vers le bas à partir de ladite ouverture.

6. Dispositif selon l'une quelconque des revendications précédentes, caractérisé en ce que ladite barre transversale (16) est précontrainte pour se dé-

placer dans une direction sensiblement opposée à la direction de déplacement du récipient.

7. Dispositif selon la revendication 6, caractérisé en ce que ladite barre transversale (16) comporte une plaque (19) pour séparer ladite base (12) dudit couvercle (13). 5
8. Dispositif selon l'une quelconque des revendications précédentes, caractérisé en ce qu'il comprend également des moyens (24) supportés par ladite pièce transversale (23) pour déverrouiller les moyens de verrouillage de la base (12) sur le couvercle (13) du récipient. 10
9. Dispositif selon l'une quelconque des revendications précédentes, caractérisé en ce qu'il comprend également des moyens (26) pour fixer le récipient (11) en position ouverte. 15

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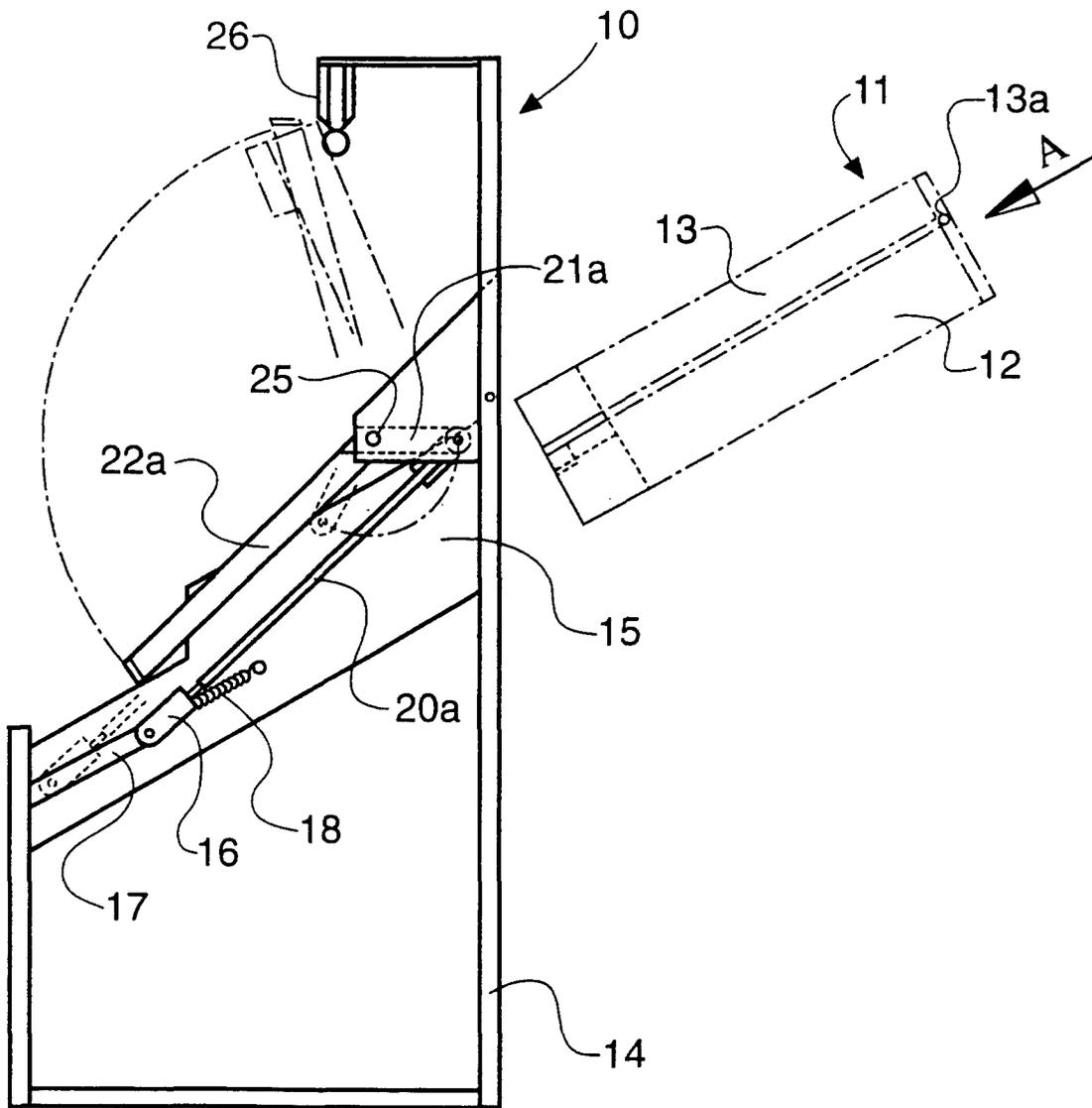


Fig. 1

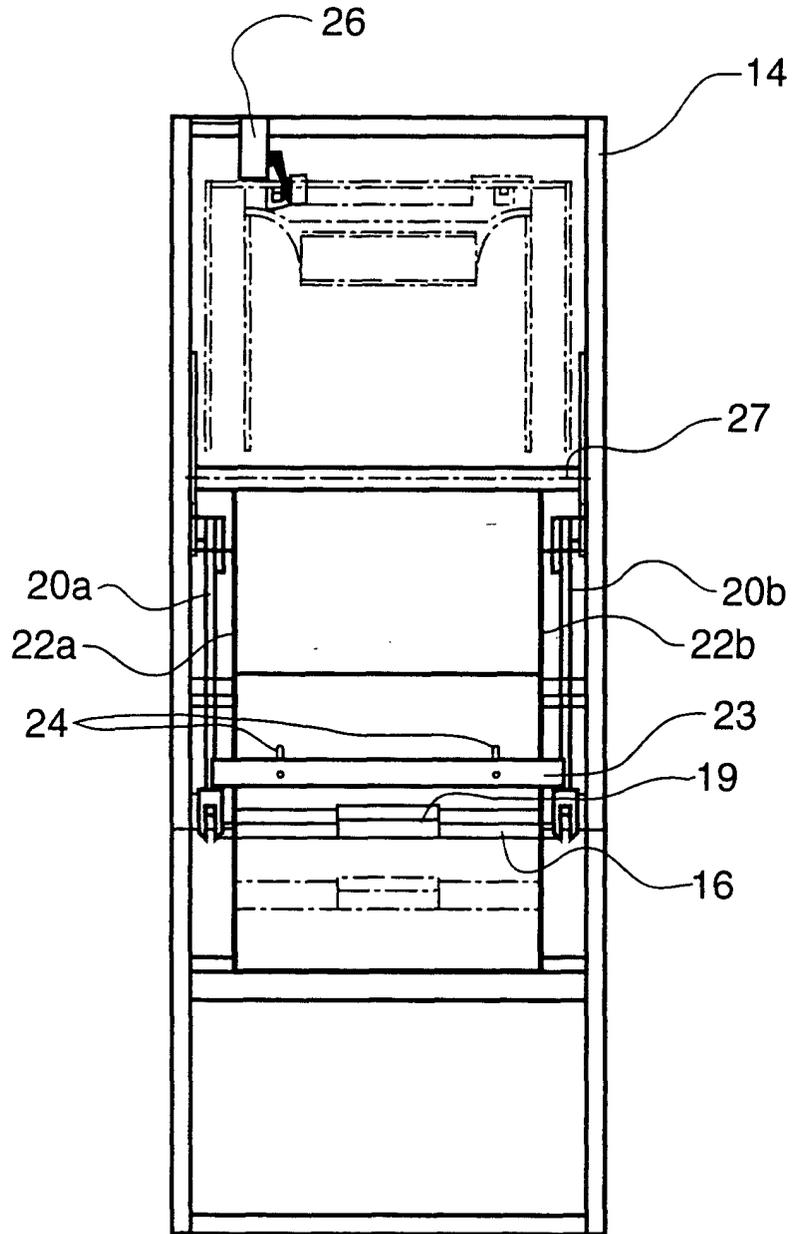


Fig. 2