

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 807 598 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

19.11.1997 Bulletin 1997/47(51) Int Cl.⁶: **B67B 7/00, B65B 69/00**(21) Application number: **97302889.7**(22) Date of filing: **28.04.1997**

(84) Designated Contracting States:

AT BE CH DE DK ES FI FR GB GR IE IT LI NL PT SE(30) Priority: **16.05.1996 GB 9610211**(71) Applicant: **THE POST OFFICE****London EC1V 9HQ (GB)**

(72) Inventors:

- **Hayes, Keith**
Dumfries DG1 3NY (GB)

- **Benson, Tony, c/o Royal Mail Cashco**
Manchester M60 1DA (GB)

(74) Representative: **Lee, Nicholas John et al**

Haseltine Lake & Co.,
Imperial House,
15-19 Kingsway
London WC2B 6UD (GB)

(54) Device for opening a container

(57) The invention provides a device (10) for opening a container (11), such as a security case of the type used for carrying cash and other valuables. The device (10) has an inclined open tray (15) for receiving the container (11), a crossbar (16) which holds the base (12) of

the container (11), and a cross piece (23) which contacts the lid (13) of the container (10). When the container (11) is slid down the tray (15), the crossbar (16) holds the base (12) of the container (11) in place and the cross piece (23) pivots the lid (13) of the container (11) upwards to open the container (11).

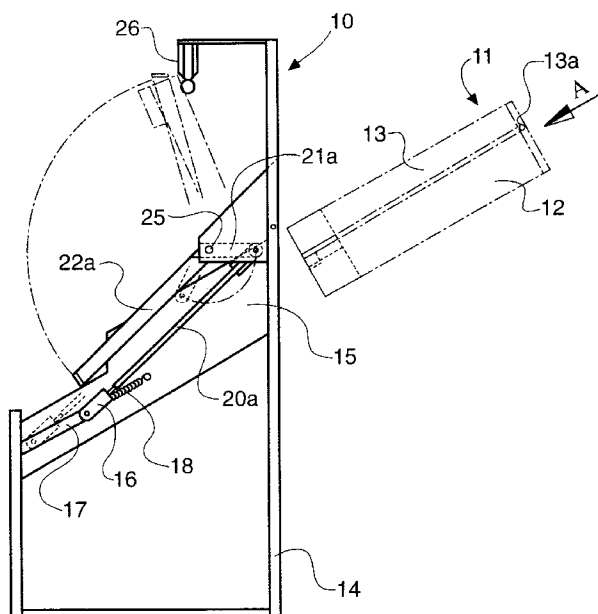


Fig. 1

EP 0 807 598 A1

Description

The present invention relates to a device for opening a container.

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.

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.

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.

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.

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 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.

In a preferred embodiment, the second means is arranged to detect when a container is received by the first means and cause the third means to open the case. In this embodiment, it is preferred that the second means is arranged to move 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.

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

The first means may include 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.

Preferably, 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.

The second means may comprise 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. More preferably, the crossbar is biased to move in a direction substantially opposite the direction of travel of said container. The crossbar may include a plate for separating said base and said lid.

Preferably, the third means comprises a pivot cradle including a cross piece for engaging said lid, said pivot cradle being pivotable such that said cross piece is movable between a first position above said crossbar in which, in use, said container is closed and a second position in which, in use, said container is open, movement of said crossbar being transmitted to said pivot cradle by means of linkage arms.

The device may further comprise means for unlocking said means for locking the container, which means for unlocking may be included on the crossbar. The device may also further comprise means for securing said container in an open position.

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.

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.

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).

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.

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.

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.

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.

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.

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 17 to separate base 12 from lid 13 of case 11.

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 17 of crossbar 16.

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.

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.

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.

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).

2. A device (10) as claimed in claim 1, wherein said second means (16) is arranged to detect when a container (11) is received by said first means (15) and cause said third means (22a,22b,23) to open the case.
3. A device (10) as claimed in claim 2, wherein said second means (16) is arranged to move when a container (11) is received by said first means (15), movement of said second means (16) causing said

third means (22a,22b,23) to open the container (11).

4. A device (10) as claimed in claim 3, wherein said second means (16) is physically linked to said third means (22a,22b,23) such that movement of said second means (16) causes said third means (22a, 22b,23) to open the container (11). 5
5. A device (10) as claimed in any preceding claim, wherein said first means (15) includes an aperture and a surface, the container, in use, being passed through said aperture and slid over said surface. 10
6. A device (10) as claimed in claim 5, wherein the device (10) 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 (11) from the aperture. 15 20
7. A device (10) as claimed in claim 5 or claim 6, wherein said second means (16) is arranged such that, when a container (11) is slid over said surface, said second means (16) engages the container (11) and moves therewith, movement of said second means (16) causing said third means (22a,22b,23) to open the container (11). 25
8. A device (10) as claimed in claim 5, 6 or 7, wherein said surface is inclined. 30
9. A device (10) as claimed in any preceding claim, wherein said second means (16) is arranged to hold said base (12) in a predetermined orientation and said third means (22a,22b,23) is arranged to open said lid (12) when a container (11) is received by said first means (15). 35
10. A device (10) as claimed in claim 9 when appended to claim 5, 6, 7 or 8, wherein said second means comprises a crossbar (16) for engaging said base (12), said crossbar (16) extending above at least a part of said surface substantially perpendicular to the direction in which said container (11) is, in use, slid over said surface and being arranged so as to move substantially in the direction of travel of said container (11). 40 45
11. A device (10) as claimed in claim 10, wherein said crossbar (16) is biased to move in a direction substantially opposite the direction of travel of said container (11). 50
12. A device (10) as claimed in claim 11, wherein said crossbar (16) includes a plate (19) for separating said base (12) and said lid (13). 55
13. A device (10) as claimed in any one of claims 10 to 12, wherein said third means comprises a pivot cradle (22a,22b,23) including a cross piece (23) for engaging said lid (13), said pivot cradle being pivotable such that said cross piece (23) is movable between a first position above said crossbar (16) in which, in use, said container (11) is closed and a second position in which, in use, said container (11) is open, movement of said crossbar (16) being transmitted to said pivot cradle by means of linkage arms (22a,22b).
14. A device (10) as claimed in any preceding claim, further comprising means (24) for unlocking said means for locking the container (11).
15. A device as claimed in claim 14 when appended to claim 13, wherein said crossbar (16) includes said means for unlocking the means (24) for locking the container (11).
16. A device as claimed in any preceding claim, further comprising means (26) for securing said container (11) in an open position.

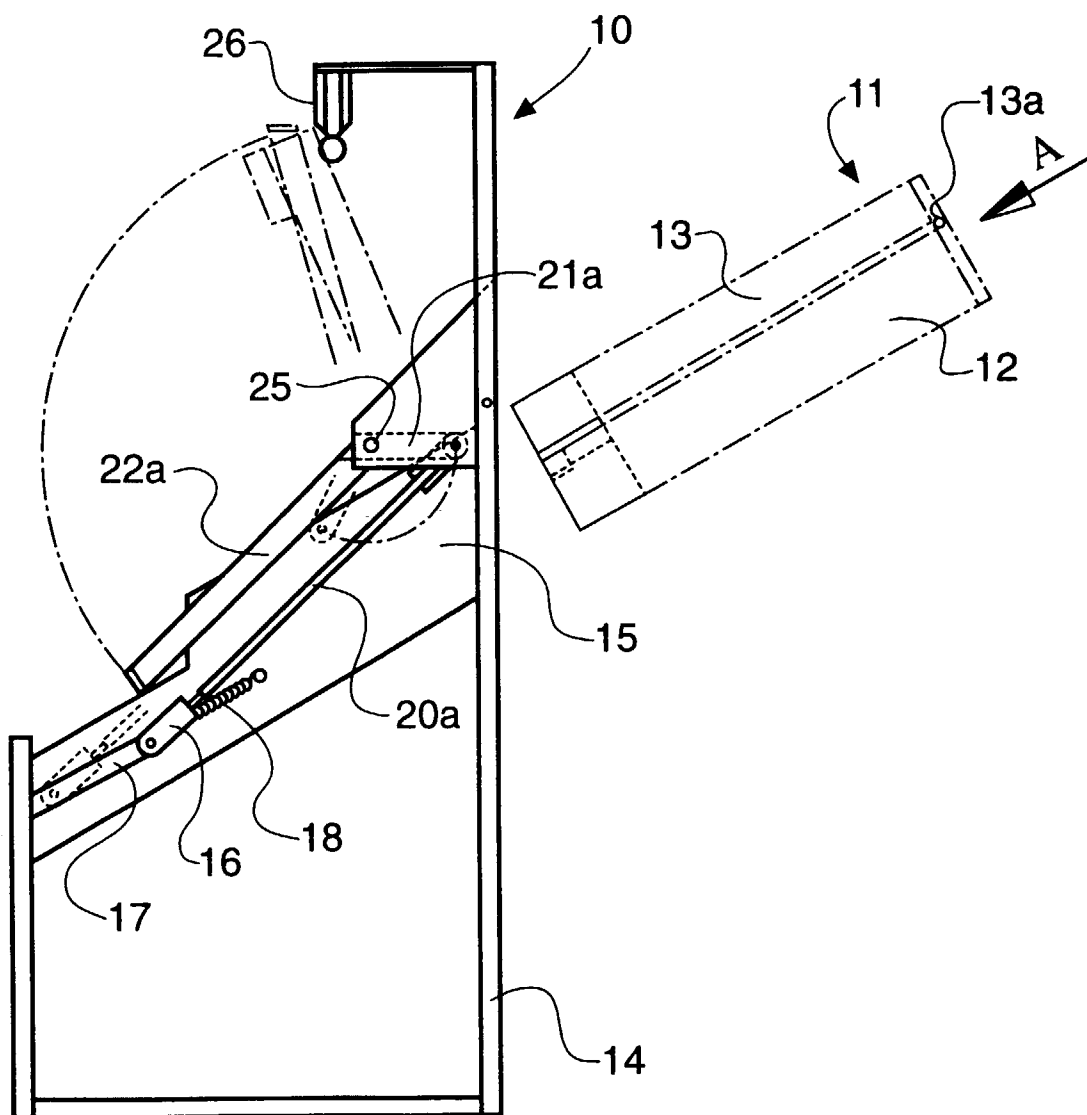


Fig. 1

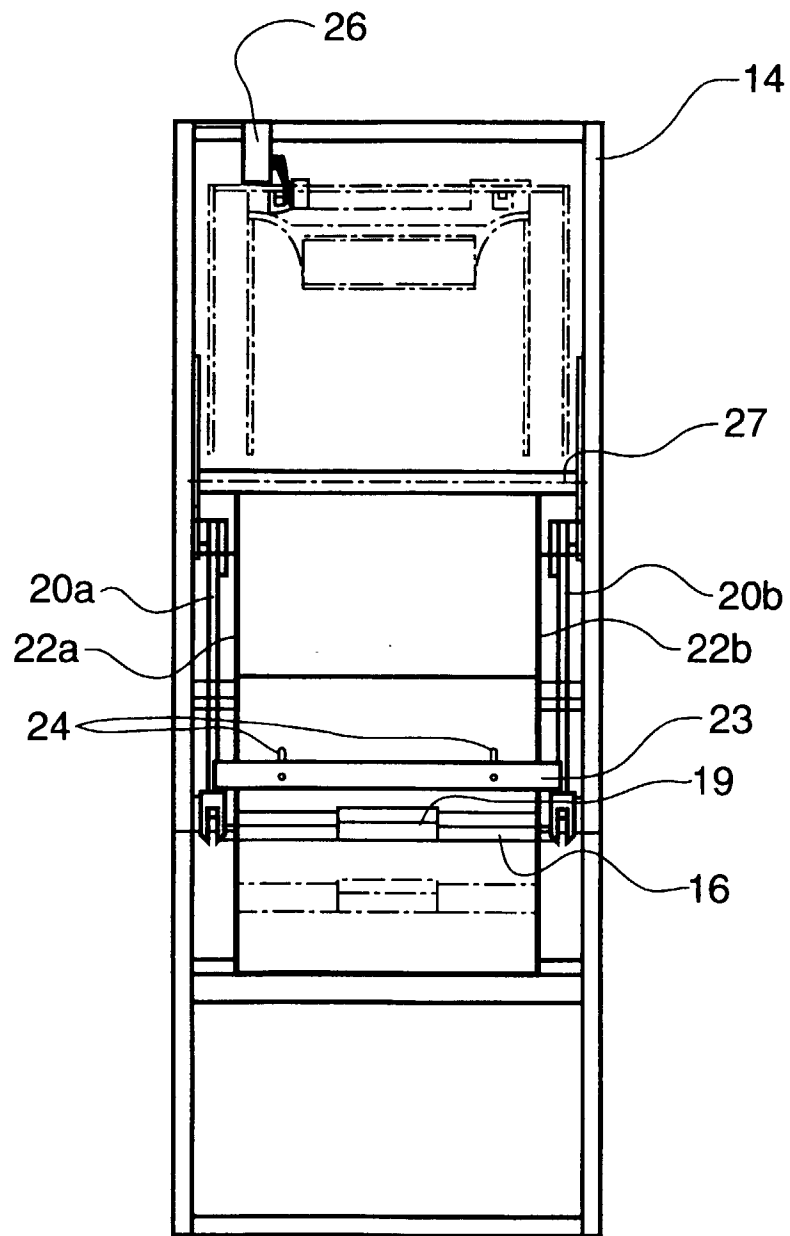


Fig. 2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 30 2889

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	DE 14 97 466 A (EASTMAN KODAK COMPANY) 10 July 1969 * page 12 - page 15; claim 11; figures 2-5 *	1-3,5,8,9,14	B67B7/00 B65B69/00
X	US 5 094 582 A (MOLZHON FRED) 10 March 1992 * column 3, line 3 - line 21; figures 1,2,4,6 *	1,9,14	
X	EP 0 334 987 A (MABEG MUELL ABFALLBESEITIGUNG) 4 October 1989 * figure 8 *	1	
A	US 4 638 746 A (ISHIGURE KAZUAKI) 27 January 1987 * abstract; figure 1 *	1	
A	EP 0 201 427 A (SIGNAUX ENTR ELECTRIQUES) 12 November 1986 * abstract; figures *	1	
A	US 4 730 715 A (SIEGENTHALER FRITZ) 15 March 1988 * column 3, line 31 - line 46 * * column 5, line 30 - line 34; figure 1 *	1	
A	US 3 310 187 A (BARKER ET AL) 21 March 1967 * figures 6-8 *	1	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 31 July 1997	Examiner Martínez Navarro, A.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 (1.12.1994) (P04C01)