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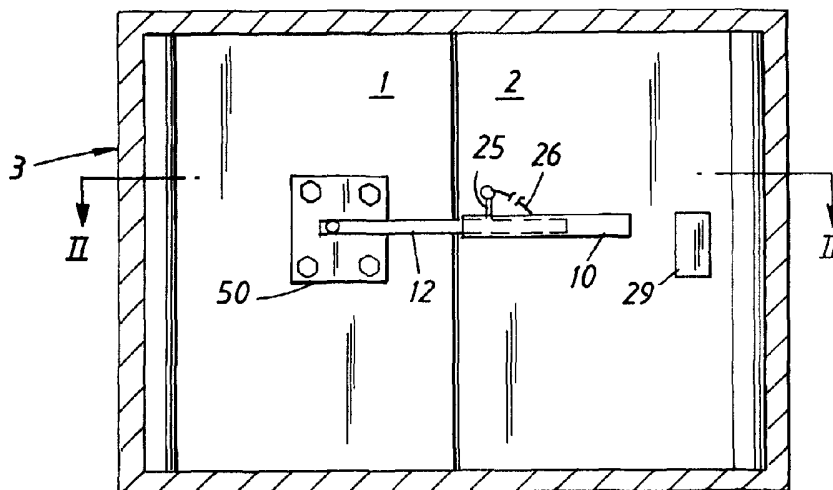
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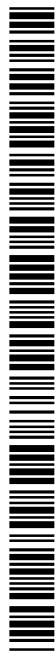
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A CONTAINER LOCK DEVICE



(57) Abstract: A locking arrangement for a container (3) comprising a wall opening which can be closed by two first and second doors (1, 2) pivotally mounted on a respective vertical edge of said opening, said arrangement further including a locking bar (12) which is carried by the first door (1) and extends across to the second door (2) and which can be secured to the second door by means of a padlock (40). Mounted on the inner surface of the door (2) is a locking bar receiving sleeve (10), said locking bar being situated on the inside of said doors. The locking bar (12) is removably mounted in the sleeve (10). The first door (1) has a through penetrating opening (20) for receiving an eyebolt (15) which projects out laterally from the locking bar (12) and passes through the through-penetrating opening (20) in the door (1) when the doors (1, 2) are closed. The eyebolt carries an eye (16) at its outwardly projecting end. A protective box-like element (30) is fitted over the through-penetrating opening (20) of the door (1), so as to protect at least parts of the padlock secured to the eye of the eyebolt (15).



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A container lock device

The invention relates to a container locking arrangement of the kind defined in the preamble of Claim 1.

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The container may, for instance, be a conventional container of standard design, having an open short end, which can be closed by two outwardly pivotal doors hinged on respective edges of the container opening

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Containers, such as conventional containers for the storage of machines, equipment, implements and material, are used particularly in the construction field, and then more particularly on building sites. Because of the risk of theft, particularly during the night and weekends and during holiday periods, it is essential that the container doors can be securely locked when closed. It is normal, in practice, to lock the outwardly opening container doors with the aid of an external locking bar which is pivotally mounted at one end on one side of one door, and the other end of which is locked to a fastening attachment on the outside of the other door by means of a padlock. The doors are typically provided with U-shaped carrier elements in the proximity of a respective one end of the mutually adjoining edges of the doors.

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One problem is that the break-in of containers of this kind has greatly increased in recent times.

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The containers are often broken into by sawing off the locking bar pivot bolt fastened to one of said doors and by the thief connecting a cable or wire to the bar and also to the towing hook of a car and pulling the bar away from the container with the aid of the car, and by the thief sawing the lock to pieces, for example the U-shaped lock element or the lock fasteners.

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Accordingly, one object of the present invention is to provide a container locking arrangement that avoids at least one of the aforesaid problems.

A further object of the present invention is to provide a lock construction, which has low vulnerability to deformation in the container, for example deformation of the container in

cross-section in the plane of the door when the container is seated on an uneven underlying surface and subjected to heavy load.

5 This object is achieved with a locking arrangement constructed in accordance with the invention.

The invention is defined in the accompanying independent Claim 1.

Further embodiments of the invention are set forth in the accompanying dependent Claims.

10

The invention will now be described by way of example and with reference to the accompanying drawing.

15 Fig. 1 is a schematic view of an inventive locking arrangement as seen against the inside of the closed-door end-wall of a standard container.

Fig. 2 is a schematic sectional view taken on the line II-II in Fig. 1.

Fig. 3 is a section view taken on the line III-III in Fig. 2.

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Fig. 4 is a view taken on the line IV-IV in Fig. 2.

Fig. 5 is a schematic sectional view of a first embodiment of the eyebolt attachment to the locking bar.

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Fig. 6 illustrates another embodiment of the eyebolt attachment to the locking bar.

30 Fig. 1 is a schematic view of the closed end-wall doors 1, 2 belonging to a standard container 3, seen towards the inside of the closed doors 1, 2. The doors 1, 2 are hinged on hinges 4 mounted at the ends of the adjacent container walls 6. The doors 1, 2 close against rebates and the free edge part of one door 1 may include an additional rebate 8, which will lie over the free edge of the other door 2.

Welded to the inside of the door 2, via spacing blocks 11, is a horizontal sleeve 10 of square cross-section. Disposed in the sleeve 10 is a square tubular locking bar 12 which can be displaced telescopically in the sleeve 10. The sleeve 10 terminates short of the free end of the door 2 and the locking bar 12 extends over the join between respective doors 1 and 2. As will be seen from Fig. 5, the outwardly protruding end of the locking bar has a through-penetrating opening 13 for accommodating the threaded stem 14 of an eyebolt 15 having an eye 16. A threaded nut 17 is welded firmly to the side of the locking bar 12 distal from the door 1, for co-action with the stem 14.

10 In order to enable the door 2 to be latched against pivotal movement in its closed position, a sliding bolt may be fitted to the inside of the door 2, preferably at its free end, for co-action with the edge of the door opening. In the case of the inventive construction, the bolt will prevent the unit consisting of the doors and the locking bar from being swung outwards, even if the hinges on one of the doors are cut away.

15 The locking bar is moved in the sleeve 10 until the eyebolt 15 is located at a suitable distance from the door hinges 4, whereafter an opening 20 is cut through the door 1 to enable the bolt 15 to be received through the opening 20 when the door 1 has been closed. In this regard, the opening can be given a cross-section that will enable the eye 16 to pass through only when it is in a horizontal plane.

20 When the locking bar 12 has been set in the aforesaid outwardly protruding position relative to the sleeve 10, a hole can be drilled through the sleeve 10 and the locking bar 12, for instance a vertical hole 24, and the axial position of the locking bar 12 can be secured with the aid of a latch bolt. The bolt 25 may be connected to the door 2 by means of a line 26.

30 A locking bar keeper 29 is provided on the inner wall of the container, for instance on the inside of the door 2. In the absence of this facility, the locking bar protruding out from the sleeve 10 would constitute a troublesome obstacle when the doors are open. The bar keeper 29 may have the form of a vertically oriented sleeve element that accommodates the locking bar profile. Alternatively, the sleeve 10 may be pivotally connected to the inside of the door so as to swing in the plane of said door.

Fig. 3 illustrates a padlock housing 30 fitted to the outside of the door 1. The housing 30 has an open bottom side. A padlock 40 can be inserted into the housing 30 from beneath, wherein the shackle 41 of the padlock is passed through the eye 16 of the eyebolt 15 and secured in the lock. The housing includes an inner wall 31 which lies flat against the outer surface of the door 1, and has an opening 32 which corresponds to the opening 20 and allows the eye 16 to pass through.

A protective plate 50 (Fig. 4) having an opening 54 for receiving the bolt 15 is mounted on the inner surface of the door 1 facing towards the housing 30. The housing wall 31, the plate 50 and the door 1 have mutually aligned drill holes and headed bolts extending from the housing 30 and through said drill holes are secured by nuts 61 on the inside of the plate 50.

Because the opening 20 will be protected by both the housing 30 and the protective plate 50, the opening 20 can be cut in both of the exposed doorplates with the aid of an abrasive wheel or some other appropriate tool. The opening 20 and the corresponding openings 54, 32 in respective plates 50, 31 can be given a relatively large clearance with respect to the cross-sectional profile of the eye 16 of the eyebolt. The eyebolt 15 can be readily adjusted to a desired position away from the locking bar 12, by simply screwing the bolt 15 into and out of the nut 17.

Fig. 6 is an axial sectioned view of the eyebolt and shows that its stem 14 extends through an opening 13 in the locking bar 12 and in a sleeve-like element 71 connected with the locking bar, said sleeve-like element 71 having a transverse drill hole 72 for receiving a locking pin 73. The bolt stem 14 includes a number of transverse, mutually parallel drill holes 81 which are spaced along said stem 14 and are able to receive a locking pin 73 for selective adjustment of the distance of the eye 16 from the locking bar 12.

In the case of containers that have an externally located locking bar in accordance with earlier techniques, the locking bar can be readily dismantled and an inventive locking arrangement constructed in its stead wherewith the locking arrangement can be readily adjusted, while enabling use of the padlock to be continued.

Larger construction companies prefer the use of padlocks in lock systems, because a padlock can be readily replaced or reused respectively.

CLAIMS

1. A locking arrangement for a container (3), wherein the container includes a wall opening that can be closed by two outwardly moving first and second doors (1, 2) which are pivotally mounted at a respective vertical edge of said opening, wherein the locking arrangement includes a locking bar (12) which extends horizontally across the first door (1) and in across the second door (1) and can be secured to said door by means of a padlock (40), wherein said first door (1) includes a through-penetrating opening (20) for receiving an eyebolt (15) which projects laterally out from the locking bar (12) so as to extend through the through-penetrating opening (20) in said first door when the doors (1, 2) are closed, wherein a protective box (30) is fitted to the first door (1) over the through-penetrating opening (20) in said door (1) so as to protect at least parts of the eye of the bolt (15) in the locked state of the padlock, **characterised** in that the second door (2) carries on its inner surface a locking bar accommodating sleeve (10); and in that the locking bar (12) is removably fitted in said sleeve (10).
2. A locking arrangement according to Claim 1, **characterised** in that the eyebolt (15) is connected to the locking bar (12) by means of elements (14, 17; 72, 73, 81) for adjusting the distance between the locking bar (12) and the eye (16) of said eyebolt.
3. A locking arrangement according to Claim 2, **characterised** in that the eyebolt (16) has a threaded stem (14) which is pivotally received in a nut (17) carried by the locking bar (12), wherein the distance between the eye of the eyebolt and the locking bar (12) can be adjusted by rotating the eyebolt (15); and in that the locking arrangement includes a protective box-like element (30) which functions to prevent rotation of the eyebolt (16) with a padlock secured thereto.
4. A locking arrangement according to any one of Claims 1-3, **characterised** in that the locking bar (12) and the bar-receiving sleeve (10) include a drill hole (24) which receives a removable latch bolt (25).
5. A locking arrangement according to any one of Claims 1-4, **characterised** in that the container (3) has mounted on an inner wall keeper (29) for temporary storage of the locking bar (12) in the unlocked state of the container doors (1, 2).

6. A locking arrangement according to any one of Claims 1-5, **characterised** in that the sleeve (10) is fixedly connected to the door.
7. A locking arrangement according to any one of Claims 1-5, **characterised** in that the sleeve (10) is connected to the door (2) for pivotal movement in the plane of said door.
8. A locking arrangement according to Claim 2, **characterised** in that the stem (14) of the eyebolt is received in an opening (13) through the locking bar (12); in that spaced along the stem of the eyebolt are a plurality of openings (81) that can be brought into alignment with an opening (72) in the locking bar (12) thereby enabling the locking bar (12) and the eyebolt to be locked by means of a locking pin (73).
9. A locking arrangement according to any one of Claims 1-8, **characterised** by latching means on the inside of the first door (2) for latching the first door in its closed state.
10. A locking arrangement according to Claim 9, **characterised** in that said latching means includes a sliding lock bolt, which is preferably carried by the second door (2) for co-action with an adjacent part of the edge of the door opening.

Fig. 1

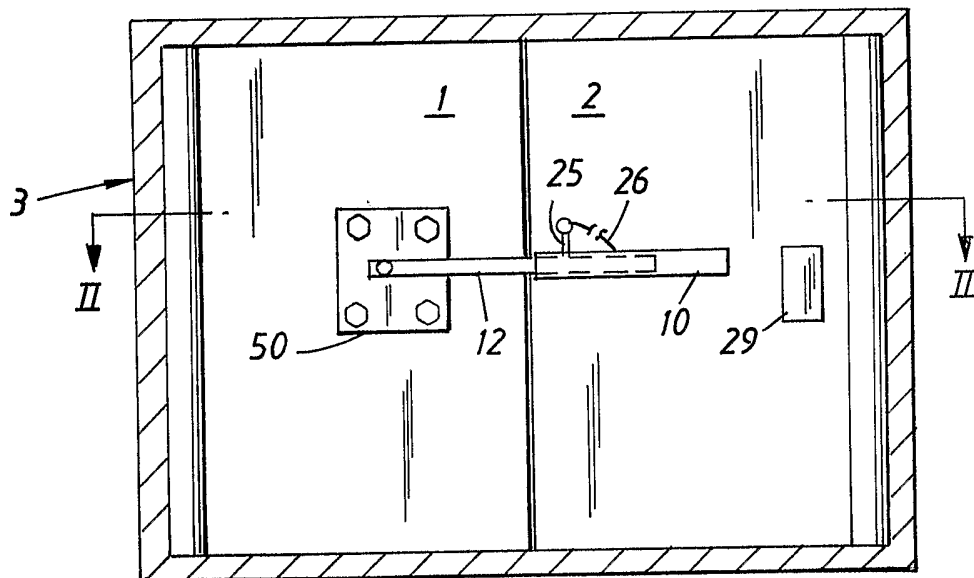
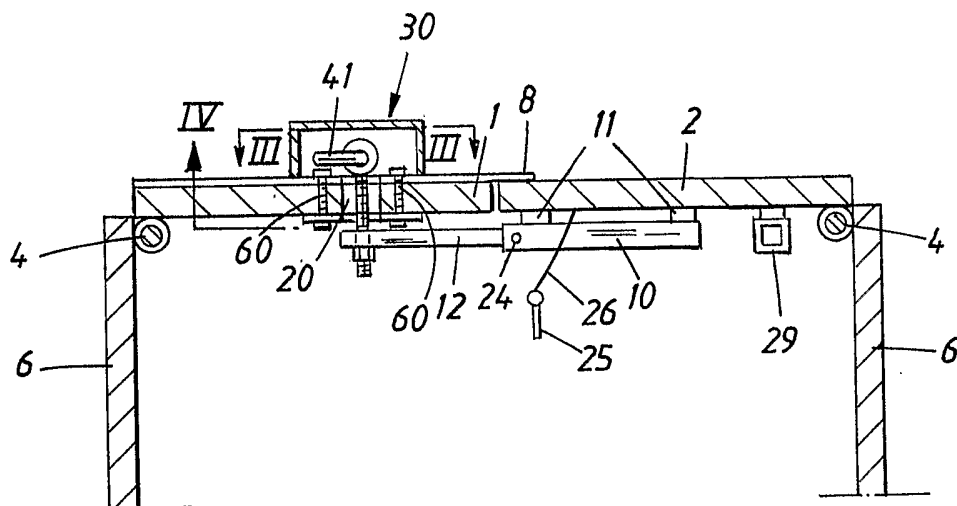


Fig. 2



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Fig. 3

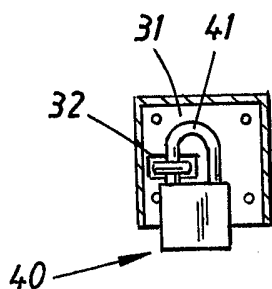


Fig. 4

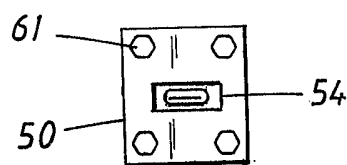


Fig. 5

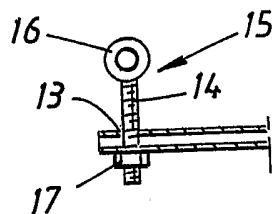
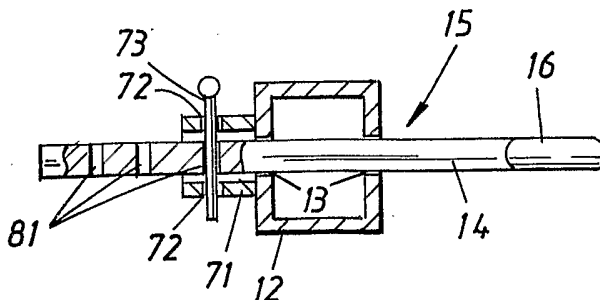


Fig. 6



INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 02/02228

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: E05B 65/00, E05C 19/00
 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)

IPC7: E05B, E05C

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)

EPO-INTERNAL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| A | US 1779491 A (W.G. RAU), 28 October 1930 (28.10.30) -- | |
| A | US 4669767 A (P. LETO), 2 June 1987 (02.06.87) -- | |
| A | US 4491354 A (L.D. WILLIAMS), 1 January 1985 (01.01.85) -- | |
| A | DE 9213108 U1 (ALT, ALOIS), 28 January 1993 (28.01.93) -- ----- | |

Further documents are listed in the continuation of Box C. See patent family annex.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 02/02228

| Patent document cited in search report | | | Publication date | Patent family member(s) | | Publication date |
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| US | 1779491 | A | 28/10/30 | NONE | | |
| US | 4669767 | A | 02/06/87 | NONE | | |
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