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# DESCRIPTION

**[0001]** The present invention relates to a lock device for a double door, the lock device comprising a

- a first lock part for mounting on a first wall of a first door of the double door, which first lock part comprises a first exterior part and a first interior part,
- a second lock part for mounting on a second wall of a second door of the double door for locking together with the first lock part in closed position of the double door, which second lock part comprises a second exterior part and a second interior part, and
- a lock,
- the first lock part comprises a first bolt means having a first length selected to screw the first exterior part and the first interior part together through the first wall of the first door,
- the second lock part comprises a second bolt means having a second length selected to screw the second exterior part and the second interior part together through the second wall of the second door, and
- the first interior part has female interlocking and/or engagement means for engaging male interlocking and/or engagement means of the second interior part.

**[0002]** In particular, the present invention relates to an anti-theft lock device for securing e.g. cargo, shipping or storage containers having double doors, however the lock device according to the present invention can be used on any device, compartment, room or unit to secure possessions and content.

**[0003]** It is important that such a container and its content arrives or is stored intact and without loss due to theft. The weakest part of such a container, especially when being used for storage, is the lock device. Most such lock devices do not come as an integral part of the container. Often the lock devices are mounted later by the end user and can have any level of strength. There are several types of lock devices. Cheaper lock devices tend to be weaker, while expensive lock devices can, but need not, be more secure. Some may even be completely ineffective in deterring thefts. For some conventional lock devices it will even be impossible to detect evidence of tampering until it is discovered that content is missing.

**[0004]** An exemplary conventional lock device is a lock device box comprising a steel house that protects a padlock from being cut or broken in any way. By enclosing the padlock it makes the container much harder to break into and less attractive to thieves.

**[0005]** One exemplary lock device box is a so-called "weld-on lock box" which the end user welds on the container doors. The weld-on lock box confines a padlock inside a weld-on house. Someone trying to break into the container would normally just cut the lock shank of the padlock, which padlock however is difficult accessible due to being hidden inside the small enclosed area of the weld-on house. A disadvantage of weld-on lock boxes is the requirement

for welding equipment.

**[0006]** Welding equipment is not needed in a "bolt-on lock device box" where a bolt on a lock box replaces the welding of the "weld-on lock box".

**[0007]** Yet an alternative of a lock device is a "clamp-on lock device" designed specifically to clamp on the container's vertical locking bars and using a pin lock with a key. The conventional "clamp-on lock device" can be moved from container to container.

**[0008]** From FR 2 839 105 is known a lock device to be positioned on the outside of the double doors of a truck. Screws through the doors and nuts on the inside of the doors attach the lock device to the doors.

**[0009]** From US H 1766 is known a lock device with a dead bolt positioned in a single door. A frame with an opening is attached to the wall, where the opening can receive the dead bolt.

**[0010]** In a main aspect of the present invention is provided a lock device of the type mentioned in the opening paragraph that is easy to operate and position as protectively as possible.

**[0011]** In a further aspect of the present invention is provided a lock device of the type mentioned in the opening paragraph that effectively deters break-ins and secures cargo and content.

**[0012]** In a further aspect of the present invention is provided a lock device of the type mentioned in the opening paragraph that is difficult to cut with hand-operated tools.

**[0013]** In a further aspect of the present invention is provided a lock device of the type mentioned in the opening paragraph that can be mounted fast and efficiently on existing and new containers, optionally be moved from one container to another.

**[0014]** In a further aspect of the present invention is provided a lock device of the type mentioned in the opening paragraph that can be mounted without welding equipment.

**[0015]** In a further aspect of the present invention is provided an improved lock device of the type mentioned in the opening paragraph.

**[0016]** The novel and unique aspects, whereby these and other aspects are achieved according to the present invention, consist in that

- the first interior part is a first plate having the first locking profile provided on a first edge,
- the second interior part is a second plate having the second locking profile provided on a second edge opposite the first edge,
- which first locking profile and second locking profile are adapted to interlock and/or

engage in the closed position of the double door, wherein

- the first locking profile protrudes substantially perpendicular from the first edge away from the first exterior part to define a locking groove or cavity along the first edge,
- the second locking profile protrudes substantially perpendicular from the second edge away from the second exterior part to define a locking protrusion along the second edge.

**[0017]** For the present invention the term "container" refers to large containers for storage, cargo, shipping, freight etc., e.g. high cube steel containers. The double door can, but need not, be provided in or constitute the short end wall of the container, but other positions of the double door is not excluded. Means for tamper-proofing may also be provided.

**[0018]** A conventional "bolt-on lock device box" also utilizes bolt means. The length of the bolt is selected so that it can pass through the container door to be fastened by a nut directly on the interior side of the container door, thus without interposed interior part as in the present invention. So the "bolt-on lock device box" differs from the present invention in not having an interior part of a lock part other than the nut, just an exterior part of a lock part to be mounted exterior to the container. The bolt means ensures that each lock part remains in fixed position on its associated door during opening and closing of the double door. Emphasize is thus made that for the present invention a suitable long bolt means is needed to reach through both the container door wall and the interior part. A further difference is that the female interlocking and/or engagement means engaging the male interlocking and/or engagement means of the respective interior parts result in that interlocking and/or engagement of the first door's first lock part and the second door's second lock part takes place inside the container, not outside the container as for conventional lock devices. Final anti-theft locking after closing the double door is done by actuating and locking the lock of the lock device.

**[0019]** At least a part of the lock itself may be positioned on an interior part and being operable from outside the double door, e.g. from an exterior part outside a double door for a container. The initial interlocking and/or engagement operation of the double door takes place upon closing the double door. In doing so the first door with the female interlocking and/or engagement means is closed. Then the second door is closed so that the male interlocking and/or engagement means of the second interior part is inserted to engage and/or lock into the female interlocking and/or engagement means of the first interior part. Once the double door is closed the lock can be operated from outside the double door to finally securely lock said double door.

**[0020]** The first locking profile and the second locking profile overlap to interlock and/or engage in the closed position of the double door. At least one of the first and second locking profiles may thus extend beyond the front edge of the opposite door on the backside of the double door when it is closed. The first locking profile that defines the female locking component may e.g. protrude laterally from the first plate towards the second locking profile over the backside of the second door.

**[0021]** By arranging interlocking and/or engagement of the double door inside the container the locking of the double door becomes an extra anti-theft means in addition to the lock, because neither the interior part of the lock nor the first locking profile and the second locking profile are accessible to thieves. When an intruder try to pull open the locked double door the male protrusion of the second locking profile, which is positioned inside the locking cavity of the first locking profile, severely obstructs pivotability of the opposite individual doors, thereby making unauthorised opening even more difficult. The first plate and the second plate also expediently serve as washer plates for the respective first bolt means and second bolt means.

**[0022]** Optionally the locking groove or cavity is closed at least at one of opposite ends by an end plate. Preferably the locking groove or cavity of the first locking profile is closed at opposite ends by an upper end plate and a lower end plate, respectively. The end plates provide guidance for inserting the second locking profile inside the groove or cavity of the first locking profile. The lower end plate advantageously further serves for keeping the first and second lock openings aligned. For example double doors of metal storage containers are very heavy and may dislocate vertically. Only a small vertical dislocation can cause dislocation of the alignment of the locking openings. When the second door is closed the lower end of the second locking profile plate can rest on the lower plate thereby keeping the alignment of the opposite locking opening required for the proper function of the lock device.

**[0023]** The first locking profile may e.g. be a U-profile and the second locking profile may be a web fitting between the legs of the U-profile of the first locking profile. In the closed position of the double door the legs of the U-profile fit as tightly as possible, e.g. with a clearance on opposite sides of the web of less than 0.5 cm, alternatively less than 0.3 cm, alternatively less than 0.2 cm.

**[0024]** In a preferred embodiment the first lock part may comprise the lock, which lock is adapted for displacing a lock bolt through aligned first and second lock openings. These aligned first and second lock openings may be a first lock opening of the female first locking profile and/or engagement means and a second lock opening of the male second locking profile and/or engagement means. The lock bolt through these aligned openings are thus hidden from outside the closed double door by being provided on the backside of the double door. The lock bolt inside the container, and thus the lock, is operated from outside the container to block separation and movement of the opposite interlocked and/or engaged interior parts when the lock bolt passes through both lock openings. Preferably the first lock opening is provided in the first locking profile and the second lock opening is provided in the second locking profile so that when these locking profiles interlock and/or engage the lock bolt traverse both locking profiles inside the closed container and is complete inaccessible to be cut by any tool or otherwise manipulated.

**[0025]** One or both of the first exterior part and the second exterior part is/are solid metal block(s), preferably heavy metal block(s), such as steel blocks which are in intimate contact with the respective container door once mounted. Such heavy blocks required massive tool capacity, effort and time to demount unauthorised, e.g. to cut off or just deteriorate, and even if

the thief is lucky to cut off any of the first exterior part and the second exterior part the interlocking of the interior parts are still a hindrance for the thief to open the double door. The first interior part and the second interior part may be made of metal as well.

**[0026]** A further advantage of this embodiment is that the block design can provide good and safe accommodation of more or less embedded parts of the lock. If for example the lock has a lock cylinder the keyway can beneficially be embedded in the first exterior part of the first lock part, simply by drilling an accommodation hole and place the keyway in the accommodation hole with a spindle protruding through the respective door to operate a locking mechanism provided on or in relation to the surface of the first plate that faces away from the first door, thus when e.g. the double door is mounted on a container the locking mechanism is mounted on the face of the first plate facing inside the container. The only part of the keyway exposed to the environment when the double door is closed is the keyhole 13a, and preferably the cylinder and thus the keyway is mounted retracted inside the block of the first exterior part so that even the keyhole 13a is displaced axially inside the accommodation hole. The rather large mass of metal surrounding the cylinder and keyway then also protects the cylinder and keyway from unintended tampering and physical access.

**[0027]** The spindle can advantageously be adapted to have adjustable length, so that one lock device can be fitted on different doors having various thickness.

**[0028]** In an alternative embodiment the lock is electronic, in which embodiment no parts or components at all of the electronic lock are provided on any of the exterior parts. The lock is exclusively provided behind the double door and no keyhole and cylinder needed in the first exterior part. Such an electronic lock can lock and un-lock the double door from both inside and outside the double door.

**[0029]** A suitable means for mounting and keeping the lock device correctly on the double door may be configured so that the first bolt means includes a first bolt and a first nut, and the second bolt means includes a second bolt and a second nut. Optionally the first bolt and/or the second bolt are threaded and/or the first nut and/or the second nut is/are a screw nut.

**[0030]** In the simple embodiment the first exterior part and the second exterior part of the lock device may have exterior curved faces, e.g. to make a smooth transition towards the exterior surface of the respective door when the lock device is mounted on the double door, thereby making the visual design more elegant.

**[0031]** In one embodiment the second door may be the active door and the first door be the passive door. Which door is the passive or the active depends on which door the first locking profile and the second locking profile are provided on, in that the female locking profile needs to be on the passive part to cooperate with the male locking profile upon closing the double door.

**[0032]** Accordingly, the first door may be configured as the second door, and the second door

be configured as the first door.

**[0033]** The present invention also relate to a method of mounting the lock device described above on a double door, e.g. the double door of a container.

**[0034]** The method comprises the steps of

- drilling one or more first holes in the first door for inserting a first bolt means and a spindle,
- drilling one or more second holes in the second door for inserting the second bolt means,
- assembling the first lock part by placing the first exterior part on the exterior side of the first door and the first interior part on the interior side of the first door and tightening the first bolt means so that the first interior part and first exterior part are secured to the first door, and
- assembling the second lock part by placing the second exterior part on the exterior side of the second door and the second interior part on the interior side of the second door and tightening the second bolt means so that the second interior part and second exterior part are secured to the second door.

**[0035]** The spindle of the lock device extends from the first exterior part through the first door to operate the lock mechanism on the first interior part to displace the lock bolt through the aligned first and second openings of the respective first and second locking profiles.

**[0036]** The lock device according to the present invention can be used to lock up other kinds of enclosures and compartments than containers as defined above. The lock device can be used for locking together opposite doors of any closure arrangement for a compartment, including double doors for gateways, entrance points, fencings, etc. This list is not exhaustive and other uses are foreseen within the scope of the present invention.

**[0037]** The invention will now be described in further details below with reference to the accompanying drawing in which,

fig. 1 is a perspective exploded view of the first lock part seen from the first exterior part, without the lock,

fig. 2 is a perspective exploded view of the first lock part seen from the first interior part, and including an exploded view of the lock components of the lock,

fig. 3 is a perspective exploded view of the second lock part seen from the second exterior part,

fig. 4 is a perspective exploded view of the second lock part seen from the second interior part,

fig. 5 is a perspective view of a storage container having a closed double door being provided with the lock device seen in the previous figures,

fig. 6 is a principle sketch of the interlocking of the lock device mounted on a closed double door of the storage container seen in fig. 5 in closed condition,

fig. 7 shows the same but with an open double door, and

fig. 8 shows, in perspective, an alternative embodiment of a first interior part of a first lock part and a second interior part of a second lock part.

**[0038]** In the following detailed description it is assumed by way of example that the first lock part is mounted on the left door of a storage container when viewed from outside the container, and the second lock part is mounted on the right door of the storage container when viewed from outside the container. In this embodiment the left door is the first door and the right door is the second door. However, this arrangement shall not be seen as limiting the versatility of mounting the lock parts. So in an alternative embodiment the first lock part can be mounted on the left door and the second lock part be mounted on the right door of the storage container when viewed from outside the container. Furthermore, the lock device is only by way of example shown on a storage container. Emphasis is made that the lock device can be used on other objects having double doors.

**[0039]** Fig. 1 is a perspective exploded view of the first lock part 1 of a lock device 1,2 seen from the first exterior part 3 opposite the first interior part 4, and fig. 2 shows the first lock part 1 from the first exterior part 4. The closed lock device 1,2 is shown and described in subsequent drawings.

**[0040]** The first exterior part 3 is a solid steel block wherein a first bolt means 5 is secured to protrude towards the first interior lock part 4 through appropriate holes drilled, or otherwise provided, in a first door (not shown). The first interior lock part 4 includes a first plate 6, which has a female first locking profile 7, in form of a U-profile, in extension of a first edge 8 of the first plate 6. In case the double door is a container double door having vertically hinged doors the first edge 8 is typically vertical when the lock device 1,2 is mounted to the double door and the container is placed on the ground, and so is the female first locking profile 7. A first contact face 9 of the first plate 6 is mounted onto the first door, and an opposite lock support face 10 serves for supporting and mounting a lock box 11 of the lock. The lock box 11 has a lock bolt 12, in the present case a square bolt, to be operated by means of a key for a cylinder 13 of a cylinder lock, e.g. similarly to a conventional cylinder lock, which is mounted in the first exterior lock part 3, as will be described further below.

**[0041]** When the first exterior lock part 3 is mounted on the first door of the double door the long bolts 5a,5b,5c of the first bolt means 5 of the first exterior lock part 3 pass through drilled holes in the first door and further through three aligned first holes 14a,14b,14c in the first plate

6 of the first interior lock part 4. Then the first exterior lock part 3 is firmly secured to said first plate 6 by means of three associated sets of first washers 15a,15b,15c and first nuts 16a,16b,16c, which are tightened to the lock support face 10 of the first plate 6, thereby sandwiching the wall of the double door in-between the first exterior lock part 3 and the first interior lock part 4. The position on the first plate 6 of the assembled first bolt means 5 and the co-operating first washers 15a,15b,15c and first nuts 16a,16b,16c does not overlap the lock box 11 and has no impact on the operation and function of the lock. This assembled fastening means 5;15a,15b,15c; 16a,16b,16c ensures solid and reliable mounting of the first lock part 1 on the first door. This position of assembled first bolt means 5, first washers 15a,15b,15c and first nuts 16a,16b,16c is shown and given in the figures just by way of example for the present embodiment, and can be any position that is not in the way for the operation of any other means of the lock device 1,2.

**[0042]** The U-profiled female first locking profile 7 is defined by a first leg 17a that extends from the first edge 8 of the first plate 6 into a second leg 17b via the bottom wall of the U-profile 7 to define a groove, cavity or gap 18 for receiving a male part of a second lock part, as will be explained in further details below with references to the further figures. A recess 19 of the first leg 17a serves to accommodate a front part 20 of the lock box 12, which front part 20 is inserted laterally in the first leg 17a, so that the lock bolt 12 can reciprocate inside a first lock opening 20 traversing the first leg 17a via the recess 19. The lock box 11 can be mounted to the lock support face 10 of the first plate 6 using any appropriate method, including welding to the first plate 6 and/or screwing or force-fitting. In the present embodiment first through-holes 20a',20b' disposed vertically on opposite sides of the first lock opening 20 serve for receiving first lock box screws 20a", 20b" to firmly further fasten the lock box 11 laterally in the recess 19 of said first lock profile 7. Axially the lock box 11 is fastened to the plate 6 by means of second lock box screws 39a', 39b' in second through-holes 39a", 39b" made in the first plate 6 and further to the lock box by means of third through-holes 40a', 40b'.

**[0043]** The cylinder 13 of the cylinder lock is mounted in a cylinder lock hole 21 in the first exterior lock part 3 so as to be encased, embedded and hidden for thieves and intruders. Only a keyhole 13a is visible and accessible from outside the first exterior lock part 3. Preferably, the cylinder lock hole 21 has a reduced diameter at the exterior face of the first exterior part 3 to only provide for access to a keyhole 13a, which keyhole 13a preferably is retracted from said exterior face of the first exterior part 3.

**[0044]** In addition to the cylinder 13, the cylinder lock includes a holder 22 for holding an enlarged head 23 of a first elongated and extended spindle part 24 in operatively engagement with the cylinder 13. To that purpose, additionally the enlarged head 23 has a head recess 25 for engaging a male extension 26 on the cylinder 13, so that when the key is turned, so is the first elongated and extended spindle part 24. The enlarged head 23 of this first spindle part 24 has an extension in form of an elongated split neck part 27. This split neck part 27 has an axial slit 28, which in the embodiment shown extends from the enlarged head 23 to the free end 29 of the split neck part 27, to allow for inserting a male second spindle part 30 provided on the lock box 11 so that the length of the combined spindle can be adjusted to the thickness of

different first doors. The second spindle part 30 is operatively connected to the lock bolt 12, so that when the male second spindle part 30 is engaged inside the axially extending second split neck part 27, the lock bolt 12 can be displaced laterally to pass in and out of at the aligned first lock opening 20 and second lock opening upon turning a key. Although the spindle 24,30 are much longer than for a conventional key lock or pin lock, the lock bolt 12 can be operatively connected via a conventional locking mechanism.

**[0045]** The engaging first spindle part 24 and second spindle part 30 are mounted inside a pipe guide piece 31 to prevent disengagement when the combined engaged spindle structure 24,30 rotates to thereby displace the lock bolt 12 laterally through the first lock opening 20 and second lock opening to lock the double door. The guide pipe piece 31 reaches through a guide hole 32 in the first plate 6 so that one end 31a of the guide pipe piece 31 abuts the enlarged head 23 of the first spindle part 24 and the opposite end 31b of the guide pipe piece 31 reaches towards, optionally into, the lock box 11. The pipe guide piece 31 further holds on to the engaging spindle parts 24,30 even though said spindle parts 24,30 are not engaged along the entire length, e.g. in case of a thick first door that only allows some of the opposite co-operating lengths of the spindle parts 24,30 to overlap to engage. The guide pipe piece helps to control engagement of the spindle parts 24,30.

**[0046]** The engaging male extension 26 of the cylinder 13 located in the head recess 25 and the enlarged head 23 of the first spindle part 24 are rotatably arranged in a complementary cavity 22a of the holder 22 to further prevent disengagement of male extension 26 and head recess 25.

**[0047]** The assembled cylinder 13, holder 22, and enlarged head 23 of the first spindle part 24 are mounted inside cylinder lock hole 21 of the first exterior part and held in place inside said cylinder lock hole 21 by means of a first cover plate 33, which has a first cover plate hole 34 for exiting the split neck part 27 of the first spindle part 24. First screws 35 serve to screw the first cover plate 33, the holder 22, and the cylinder 13 together using holes provided for that purpose in the respective component. The diameter of the first cover plate hole 34 is smaller than the diameter of the enlarged head 23, so that when the assembly of first cover plate 33, holder 22, and cylinder 13 is secured to the first exterior lock part 3 by means of second screws 36, this difference in diameter serves as an additional means to make sure that the enlarged head 23 stays put behind the first cover plate 33.

**[0048]** A second cover plate 37 serves substantially similar purpose at the lock box 11, thus it secures the second spindle part 30 firmly to the lock box 11. Prior to being mounted to the first plate 6 the second spindle part 30, that protrudes from the lock box 11 towards the first spindle part 24, is passed through a second cover part hole 38 of the second cover plate 37. Hereafter the second cover plate 37 is fastened to the lock box 11 by means of third screws 39a,39b that extend through lock box holes 40a,40b. The third screws 39a,39b are secured on the exterior face of the lock box 11 by means of corresponding small nuts 41.

**[0049]** The extra lengths and engagement of the long spindle parts 24,30 are needed to reach

through the first door and the first lock part 1.

**[0050]** Fig. 3 is a perspective exploded view of the second lock part 2 seen from the second exterior part 42, and fig. 4 is a perspective exploded view of the second lock part 2 seen from the second interior part 43.

**[0051]** The second exterior part 42 is also a solid steel block wherein a second bolt means 48 is secured to protrude towards the second interior lock part 43 through appropriate holes drilled, or otherwise provided, in a second door (not shown).

**[0052]** The second interior lock part 43 includes a second plate 44, which has a male second locking profile 45, in form of a protruding web in extension of a second edge 46 of the second plate 44, so that the second interior lock part 2 has an L-shape. In case the double door is a container double door having vertically hinged doors the second edge 46 is typically vertical, similarly to the first edge 8. A second contact face 47 of the second plate 44 is mounted in contact with the second door. When the double door is closed the male second locking profile 45 and the female first locking profile 7 engage to interlock. When the first door is open the female first locking profile 7 is exposed, so that when the second door is closed the male second locking profile 45 is turned into locking engagement with the groove, cavity or gap 18 between the opposite legs 17a,17b of the female first locking profile 7.

**[0053]** The second exterior lock part 42 is mounted on the second door by means of two long bolts 48a,48b of a second bolt means 48 an end of which is embedded, e.g. by screwing, in the solid second exterior lock part 42. These second bolt means 48 passes through appropriate drilled holes in the second door and further through two aligned second holes 49a,49b in the second plate 44 of the second interior lock part 43. Then the second exterior lock part 42 is firmly secured to said second plate 44 by means of two associated sets of corresponding second washers 50a,50bc and second nuts 51a,51b which are tightened to the free face 52 opposite the second contact face 47 of the second plate 44 thereby sandwiching the wall of the second door of the double door in-between the second exterior lock part 42 and the second interior lock part 43.

**[0054]** The male second locking profile 45 has a second lock opening 53 that in the closed position of the double door is aligned with the first lock opening 20 of the first locking profile 7 so that the lock bolt 12 can pass through said aligned lock openings 20,53 to lock the double door.

**[0055]** Fig. 5 is a perspective view of a schematic conventional container seen from outside, such as e.g. a freight container or storage container, in the present case cube steel corrugated container 54. The container 54 e.g. has steel panel walls and a hinged steel double door 55, which includes a first hinged door 56 and a second hinged door 57. The lock device 1,2 seen in the previous figs. 1- 4 has been secured to the double door 55. Vertical door locking bars 58 are associated with the double door 55 and in co-operation with the cam keeper 59 of the door cam 60 at the bottom of the double door 55. Such containers are known to the person skilled in

the art.

**[0056]** Figs. 6 and 7 show the interlocking principle of the first lock part 1 and the second lock part 2 shown and described in relation to the previous figures on an open and on a closed double door 55, respectively, of the container 54 seen in fig. 5.

**[0057]** The first exterior part 3 is mounted on the first exterior face 61 of the first wall 56a of the first door 56, and the first interior part 4 is mounted on the first interior face 62 of the first wall 56a of said first door 56 by means of first bolt means 5a,5b traversing the first wall 56a of the first door 56 through an enforced first vertical frame part 63 of the first door 56 opposite its door hinge (not shown), only two bolts of the first bolt means are visible in figs. 6 and 7. The second exterior part 42 is mounted on the second exterior face 64 of the second wall 57a of the second door 57, and the second interior part 43 is mounted on the second interior face 65 of said second door 57 by means of second bolt means 48 traversing the second wall 57a of the second door 57 through an enforced second vertical frame part 66 of the second door 57 opposite its door hinge (not shown), only one bolt of the second bolt means is visible in figs. 6 and 7.

**[0058]** The first bolt means 5 is screwed into the first exterior part 3 and externalised through the first plate 6 of the first interior part 4 and tightened to this first plate 6 by means of nuts 15a,15b,15c and washers 16a,16b,16c of which only two sets are visible in figs. 6 and 7. As explained above the lock box 11 is mounted to the first plate 6, and the cylinder 13 of the lock is embedded in the first exterior part 3. The associated spindle 24,30 reaches through the first door 56 to operate the locking mechanism inside the lock box 11 to displace the lock bolt 12 laterally towards and through aligned first opening 20 of the first locking profile 7 of the first interior part 4 and through second opening 53 of the second locking profile 45 of the second interior part 42 when the double door 55 is closed, as seen in figs. 6 and 7.

**[0059]** As seen best in fig. 7, the first door 56 has a free first front edge 67, which in the present case includes the enforced first vertical frame part 63. The second door 57 has a free second front edge 68, which in the present case includes the enforced second vertical frame part 66. Along the second front edge 68 a seal 69, such as a plastic or rubber gasket, serves to seal against water ingress when the double door 55 is closed, in that the seal 69 fills any gap between the free first front edge 67 and the free second front edge 68 in the double door's closed position.

**[0060]** The first locking profile 7 protrudes laterally towards the web of the second locking profile 45 inside the container 54 so that the this web is located in the groove, cavity or gap 18 between the opposite legs 17a,17b of the first locking profile, whereby the opposite locking profiles 17,45 firmly interlock as a means to make any illegal or unauthorised opening of the container extremely difficult.

**[0061]** Fig. 8 is a perspective view of an alternative second embodiment of the first interior part 70 of a first lock part, seen from different faces, and a second interior part 71 of a second lock

part.

**[0062]** Said alternative second embodiment of a first interior part 70 and of a second interior part 71 corresponds substantially to the previously described first embodiments of a first interior part 3 and a second interior part 42, and for like parts same reference numerals are used. Thus the respective exterior parts 3,43 are similar as for the first embodiments.

**[0063]** The second embodiment of a first interior part 70 differs in that the groove, cavity or gap 18 of the first locking profile 7 between the opposite legs 17a,17b is closed at least at opposite ends by opposite end plates 72a,72b. The height of the second locking profile 45 is selected to be substantially same or slightly smaller than the interior distance between the end plates 72a,72b, so that when the second locking profile 45 is moved from the open condition seen in fig. 7 to the closed condition seen in fig. 6 the end plates 72a,72b guides the second locking profile 45 inside the groove, cavity or gap 18 of the first locking profile 7. When the double door 55 is locked the lower end plate 72a expediently serves to support the bottom of the second locking profile 45 to avoid that any of the first door 56 and the second door 57 misalign, e.g. due to the very weight of the doors themselves making them skew or hang so that the opposite locking openings 20,53 are not suitably aligned for receiving the lock bolt 12 through both opposite locking openings 20,53. The second locking profile 45 has been given smooth free corners 73a,73b to facilitate insertion of the second locking profile 45 into the groove, cavity or gap 18 of the first locking profile 7.

**[0064]** The end plates 72a,72b also improve structural integrity of the first interior part 4 by enforcing the transition between the first plate 6 and the first locking profile 7, including enforcing the edge 8.

**[0065]** By providing the lock itself inside the container, the container becomes difficult to open unauthorised and illegally. The interlocking female and male parts of the locking profiles with laterally inserted locking bolt when the lock is locked requires a specific sequence of actions for closing and opening the double door. In case the lock is key operated the accessibility of the specific key is also required and the keyhole being the only part of the lock accessible from the exterior parts. Even if the key cylinder is rebored, the locking bolt through the locking opening of engaging interlocking locking profiles prevents opening, or at least makes opening extremely difficult because an intruder don't have sufficient time to proceed with the break-in opening process before security systems or watchmen are alerted.

## REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- FR2839105 [0008]
- USH1766A [0009]

Krav:

1. Låseindretning (1, 2) til en dobbeltdør (55), låseindretningen (1, 2) omfatter
  - en første låsedel (1) til montering på en første væg (56a) af en første dør (56) i dobbeltdøren (55), hvilken første låsedel (1) omfatter en første udvendig del (3) og en første indvendig del (4),
  - en anden låsedel (2) til montering på en anden væg (57a) af en anden dør (57) i dobbeltdøren (55) til at låse sammen med den første låsedel (1) i dobbeltdørens (55) lukkede position, hvilken anden låsedel (2) omfatter en anden udvendig del (42) og en anden indvendig del (43), og
  - en lås,
  - den første låsedel (1) omfatter et første boltmiddel (5, 5a, 5b, 5c), der har en første længde, som er valgt til at skrue den første udvendige del (3) og den første indvendige del (4) sammen gennem den første dørs (56) første væg (56a),
  - den anden låsedel (2) omfatter et anden boltmiddel (48, 48a, 48b), der har en anden længde, som er valgt til at skrue den anden udvendige del (42) og den anden indvendige del (43) sammen gennem den anden dørs (57) anden væg (57a), og
  - den første indvendige del (4) har første hun-låseprofil og/eller hun-indgrebsmiddel (7) til at indgribe med et anden han-låseprofil og/eller han-indgrebsmiddel (45) på den anden indvendige del (43),

**kendetegnet** ved at

  - den første indvendige del (4) har en første plade (6), der har det første låseprofil (7) tilvejebragt på en første kant (8),
  - den anden indvendige del (43) har en anden plade (44), der har det anden låseprofil (45) tilvejebragt på en anden kant (46),
  - hvilket første låseprofil (7) og anden låseprofil (45) er indrettede til at sammenlåse og/eller gå i indgreb i dobbeltdørens (55) lukkede position, hvori
  - det første låseprofil (7) rager i det væsentlige vinkelret ud fra den første kant (8) væk fra den første udvendige del (3) for at definere et låsespor, hulrum eller spalte (18) langs den første kant (8),
  - det anden låseprofil (45) rager i det væsentlige vinkelret ud fra den anden kant (46) væk fra den anden udvendige del (42) for at definere et låsefremspring langs den anden kant (46).
2. Låseindretning (1, 2) ifølge krav 1, **kendetegnet** ved at mindst en del af låsen er placeret på en indvendig del (4, 43) og kan betjenes fra dobbeltdørens (55) yderside.

3. Låseindretning (1, 2) ifølge krav 1 eller 2, **kendetegnet** ved at låsesporet, hulrummet eller spalten (18) er lukket ved hjælp af en endeplade (72a, 72b) ved i det mindste en af modstående ender.
4. Låseindretning (1, 2) ifølge ethvert af kravene 1, 2 eller 3, **kendetegnet** ved at det første låseprofil (7) er et U-profil, og det anden låseprofil (45) er en flig, der passer mellem benene (17a, 17b) på det første låseprofils (7) U-profil.
5. Låseindretning (1, 2) ifølge krav 3 eller 4, **kendetegnet** ved at den første låsedel (1) omfatter låsen, hvilken lås er indrettet til at forskyde en låsebolt (12) gennem på linje oprettede låseåbninger, som er en første låseåbning (20) i det første hun-låseprofil og/eller hun-indgrebsmiddel (7) og en anden låseåbning (53) i det anden han-låseprofil og/eller han-indgrebsmiddel (45), fortrinsvis er den første låseåbning (20) tilvejebragt i det første låseprofil (7) og den anden låseåbning (53) er tilvejebragt i det anden låseprofil (45).
6. Låseindretning (1, 2) ifølge ethvert af de foregående krav 1 - 5, **kendetegnet** ved at en eller begge af den første udvendige del (3) og den anden udvendige del (42) er fast/faste metalblok(ke), fortrinsvis tung(e) metalblok(ke).
7. Låseindretning (1, 2) ifølge ethvert af de foregående krav 3 - 6, **kendetegnet** ved at låsen omfatter
  - en låsecylinder (13), som har et nøglehul og er indlejret i den første låsedel (1), og
  - en låsemekanisme (11, 12, 13), som er tilvejebragt på eller i forhold til den første plades (6) flade (10), der vender væk fra den første dør (56), hvilken låsemekanisme er i funktionel kommunikation med låsecylinderen (13) via en drejetap (24, 27).
8. Låseindretning (1, 2) ifølge krav 7, **kendetegnet** ved at drejetappen (24, 27) har justerbar længde.
9. Låseindretning (1, 2) ifølge ethvert af de foregående krav 1 - 6, **kendetegnet** ved at låsen er elektronisk.
10. Låseindretning (1, 2) ifølge ethvert af de foregående krav 1 - 9, **kendetegnet** ved at det første boltmiddel (5) indbefatter en første bolt (5a, 5b, 5c) og en første møtrik (15a, 15b, 15c), og det anden boltmiddel (48) indbefatter en anden bolt (48a, 48b) og en anden møtrik (50a, 50b), valgfrit er den første bolt (5a, 5b, 5c) og/eller den anden bolt (48a,

48b) gevindskåret og/eller den første møtrik (15a, 15b, 15c) og/eller den anden møtrik er en skruemøtrik (50a, 50b).

11. Låseindretning (1, 2) ifølge ethvert af de foregående krav 1 - 10, **kendetegnet** ved at en udvendig flade af en udvendig del (3, 42), som vender væk fra dobbeltdøren (55), når låseindretningen (1, 2) er monteret på dobbeltdøren (55), er buet mod den respektive dørs (56, 57) udvendige overflade.
12. Låseindretning (1, 2) ifølge ethvert af de foregående krav 1 - 11, **kendetegnet** ved at den anden dør (57) er den aktive dør, og den første dør (56) er den passive dør.
13. Låseindretning (1, 2) ifølge ethvert af de foregående krav 1 - 12, **kendetegnet** ved at den første dør (56) er konfigureret som den anden dør (57), og den anden dør (57) er konfigureret som den første dør (56).
14. Fremgangsmåde til montering af låseindretningen (1, 2) ifølge ethvert af de foregående krav 1 - 13 på en containers (54) dobbeltdør (55) omfatter trinnene at
  - bore et eller flere første huller i den første dør (56) til at indsætte et første boltmiddel (5, 5a, 5b, 5c) og en drejetap (24, 27),
  - bore et eller flere anden huller i den anden dør (57) til indsættelse af det andet boltmiddel (48, 48a, 48b),
  - samle den første låsedel (1) ved at placere den første udvendige del (3) på den første dørs (56) udvendige side og den første indvendige del (4) på den første dørs (56) indvendige side og spænde det første boltmiddel (5, 5a, 5b, 5c), således at den første indvendige del (4) og den første udvendige del (3) er fastgjorte til den første dør (56), og
  - samle den anden låsedel (2) ved at placere den anden udvendige del (42) på den anden dørs (57) udvendige side og den anden indvendige del (43) på den anden dørs (57) indvendige side og spænde det anden boltmiddel (48, 48a, 48b), således at den anden indvendige del (43) og den anden udvendige del (42) er fastgjorte til den anden dør (57).
15. Anvendelse af låseindretningen (1, 2) defineret i ethvert af de foregående krav 1 - 13 til sammenlåsning af en dobbeltdørs (55) modstående døre (56, 57) i ethvert lukkearrangement til et rum eller indelukke, inklusive dobbeltdøre til containere, porte, indgangssteder og hegn.

# DRAWINGS

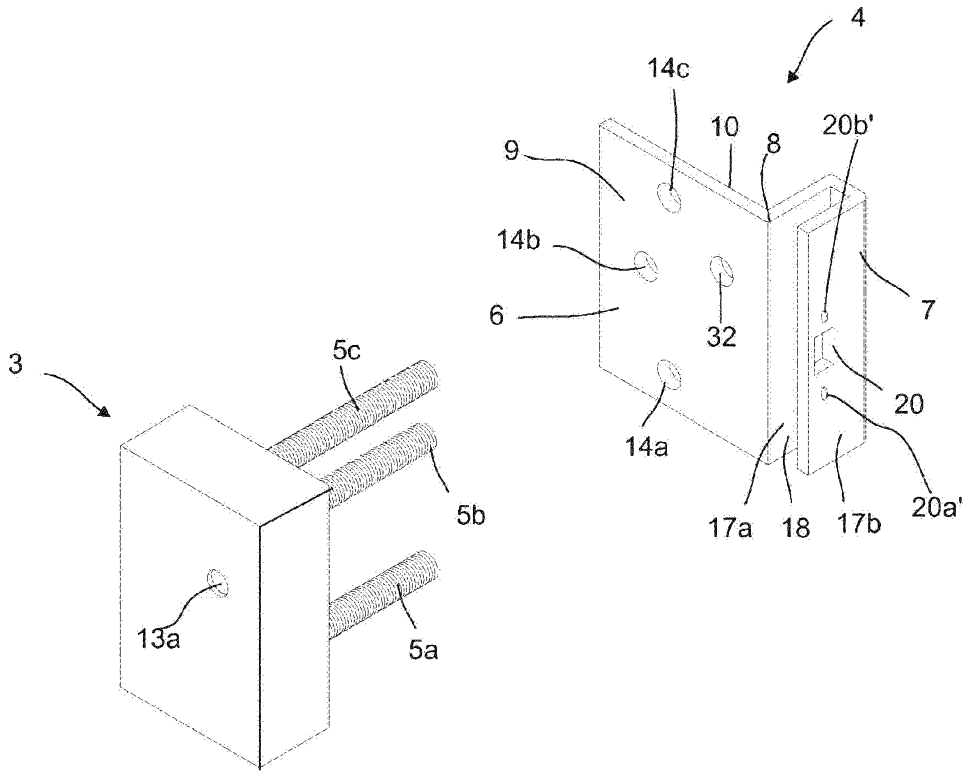


Fig. 1



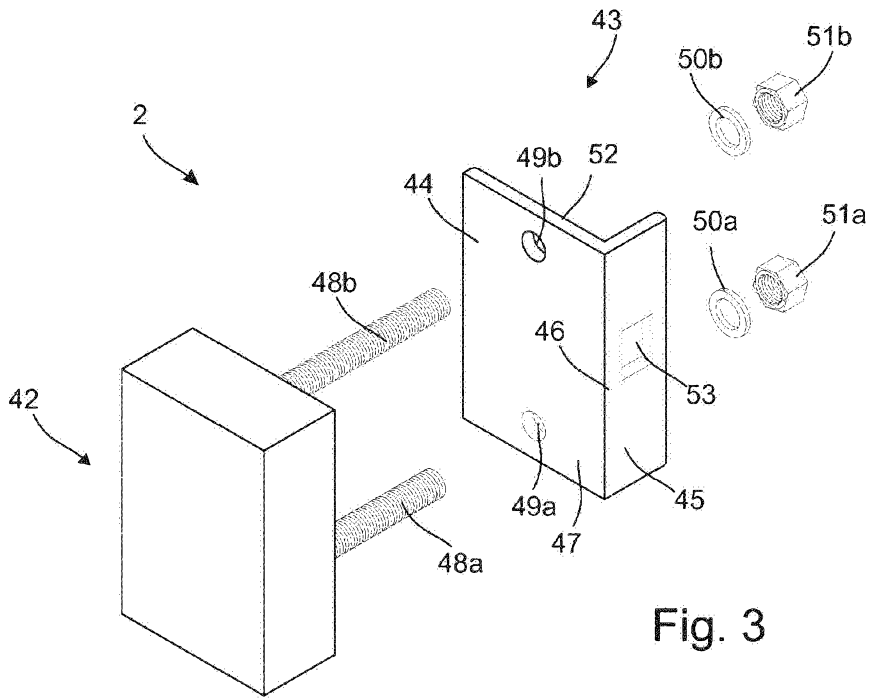


Fig. 3

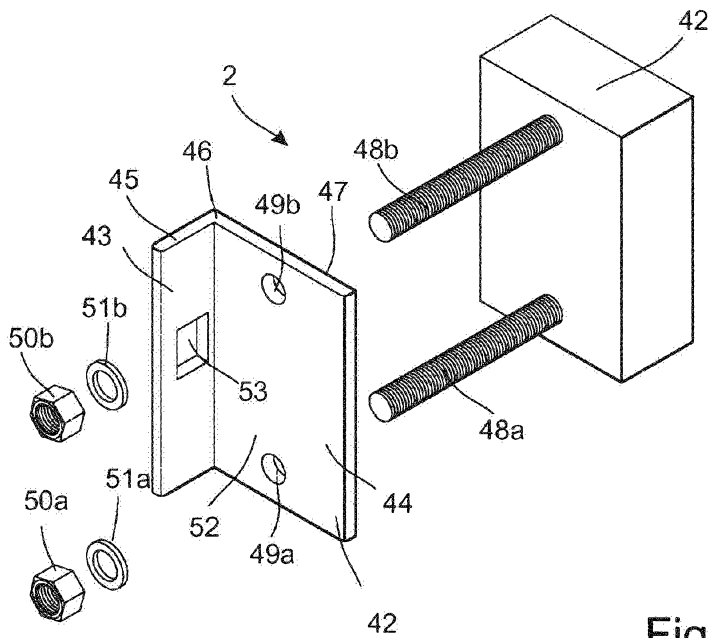


Fig. 4

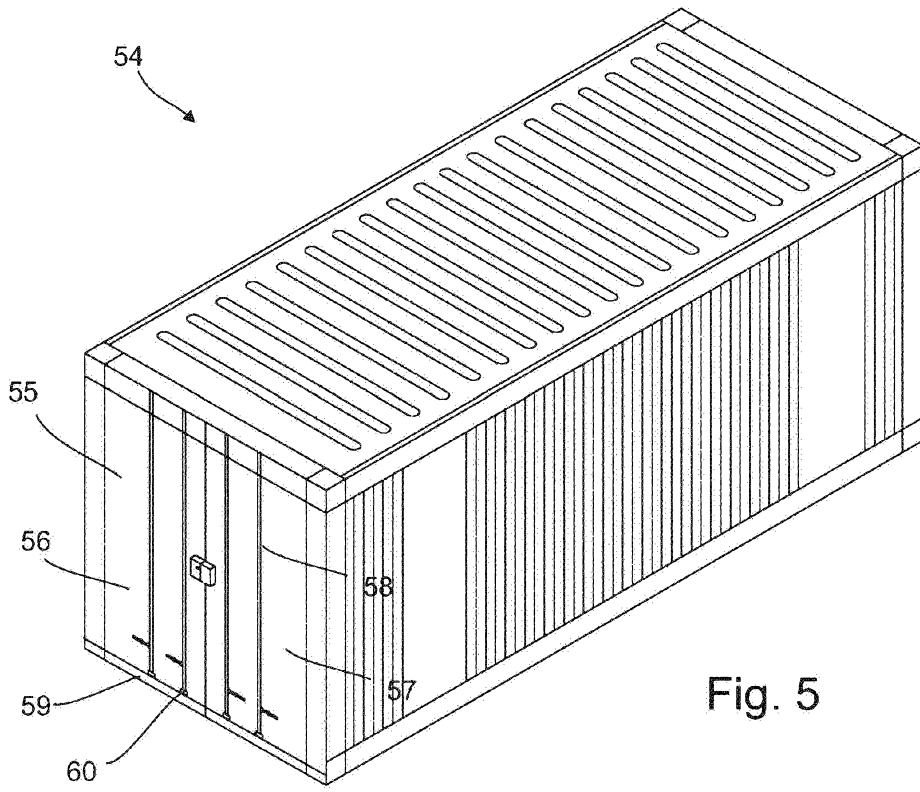


Fig. 5

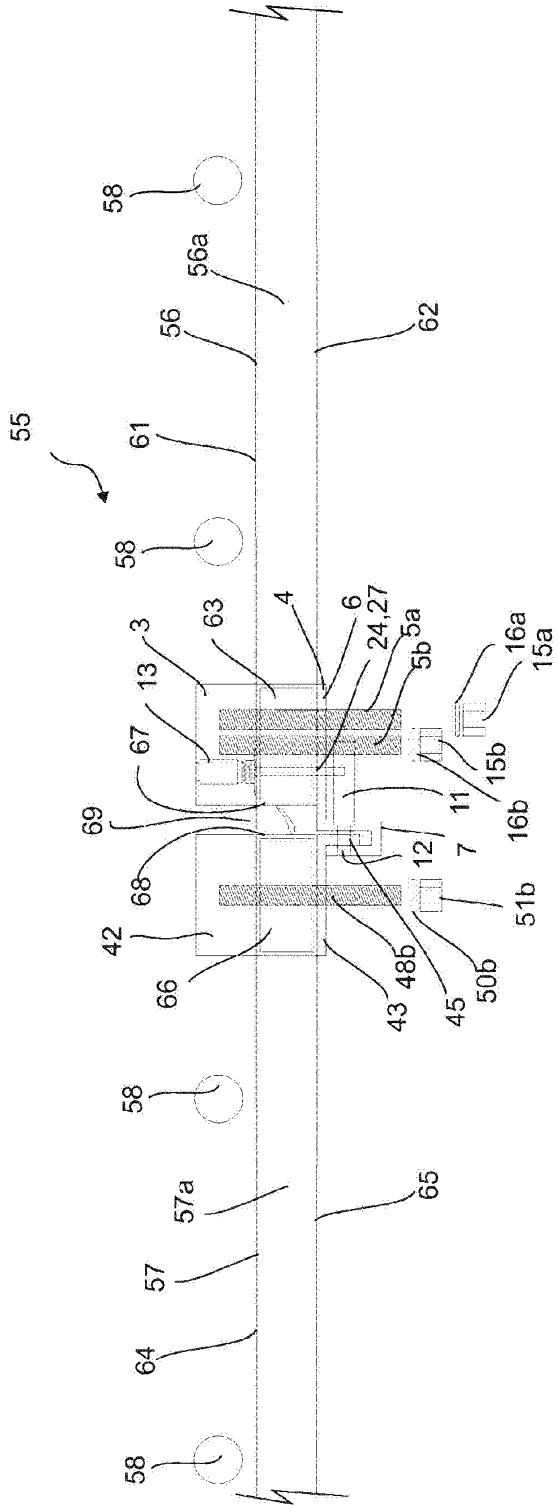


Fig. 6



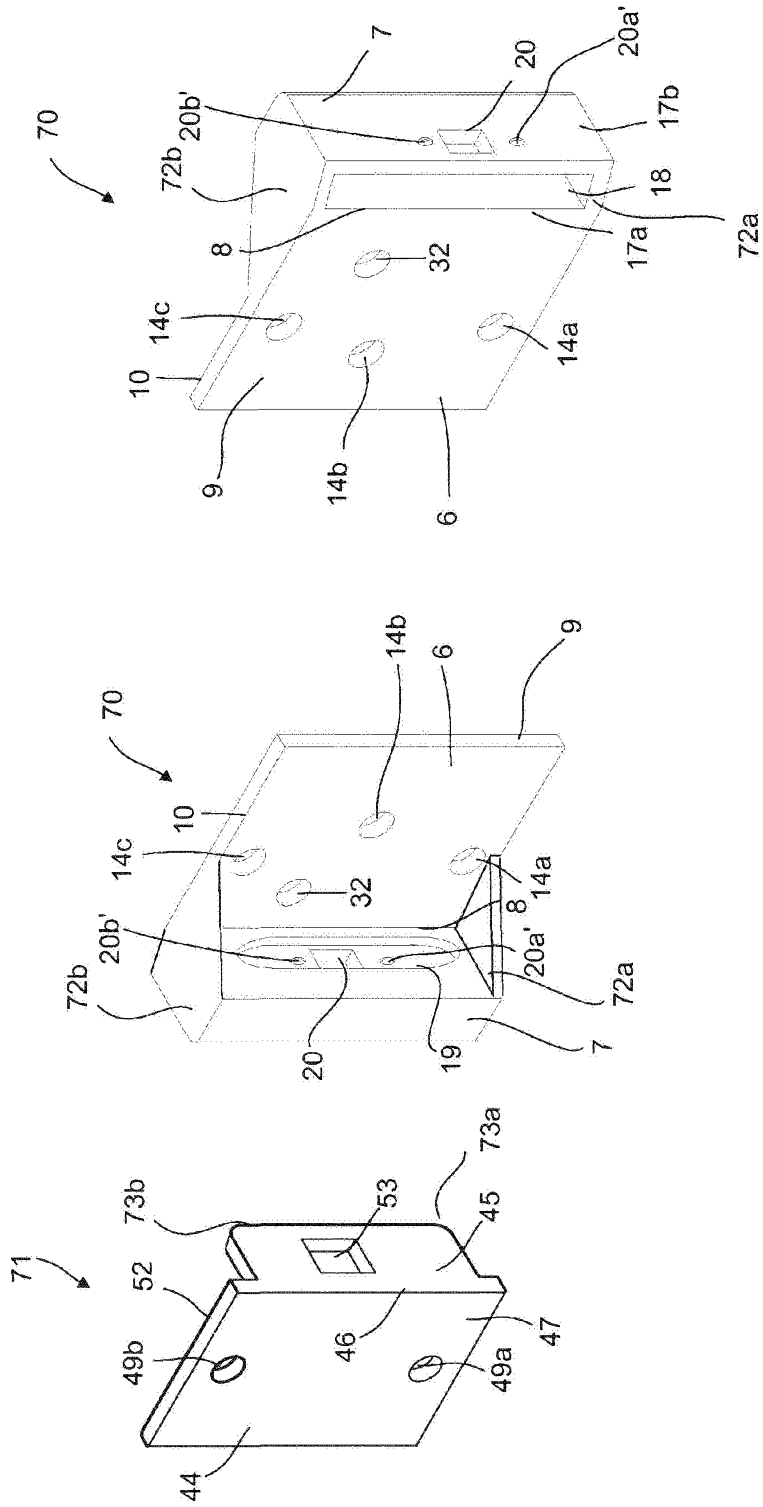


Fig. 8