



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
10.10.2012 Bulletin 2012/41

(51) Int Cl.:
E05B 65/20 (2006.01) **E05B 17/20** (2006.01)
E05C 3/04 (2006.01)

(21) Application number: **12250073.9**

(22) Date of filing: **29.03.2012**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

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(30) Priority: **04.04.2011 GB 201105616**

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(54) **A door lock**

(57) Apparatus for use as a door lock comprises a front plate 10, a locking bar 12 rotationally connected to the front plate 10 and extending beyond the front plate 10, a back plate 14 connected to and behind the front plate 14, a locking mechanism 16 mounted in the front plate 10, and when locked preventing rotation of the lock-

ing bar 12 relative to the front plate 10, a locking handle 18 mounted on the back plate 14 and when locked preventing rotation of the locking bar 12 relative to the front plate 10, and an opening handle 20 mounted on the back plate 14 and connected to the locking bar 12 for rotating the locking bar 12 relative to the front plate 10.

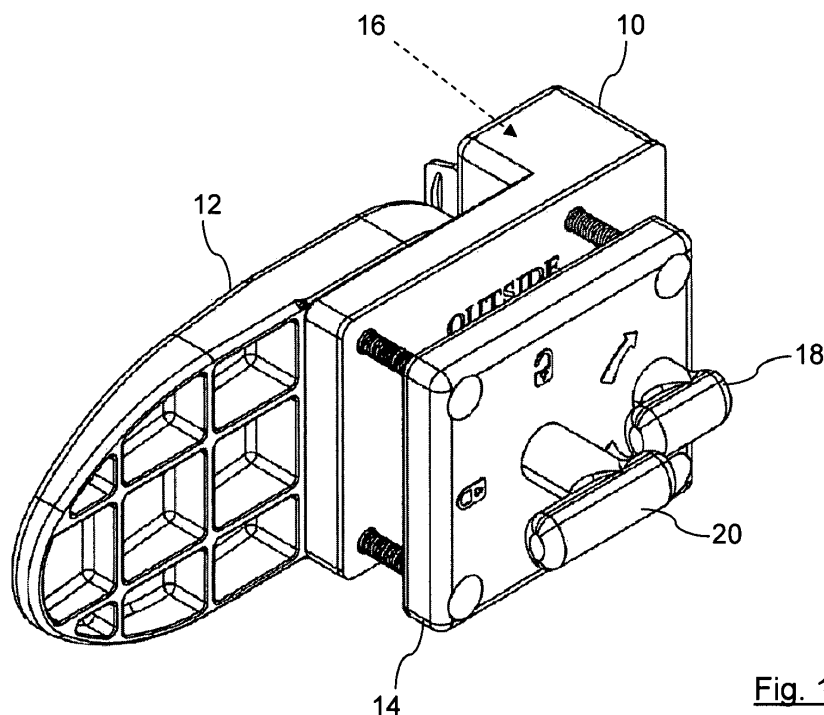


Fig. 1

Description

[0001] This invention relates to apparatus that can be used as a door lock.

[0002] It is commonplace for doors for houses and vehicles to be provided with one or more locks, in order to prevent unauthorised access to the house or vehicle. Many different types of locks are available and it is relatively common to use more than one lock on a particular door, particularly if the contents of the house or the vehicle being secured are valuable. Caravan doors are usually provided with a lock on the door that can be locked from both the inside and outside, in order to provide the users of the caravan with security when they are in the caravan, particularly when the users of the caravan are sleeping at night, as caravans can be relatively easy target for criminals. However simple mortice and deadlocks do not necessarily provide sufficient protection for many caravan doors, as they can be easily forced open by determined criminals. The construction of most caravan doors is such that the door itself can be easily bent or pressed such that the existing conventional lock, which may only have a small 2cm engagement with the door frame, can be forced.

[0003] It is therefore an object of the invention to improve upon the known art.

[0004] According to the present invention, there is provided apparatus comprising a front plate, a locking bar rotationally connected to the front plate and extending beyond the front plate, a back plate connected to and behind the front plate, a locking mechanism mounted in the front plate, and when locked preventing rotation of the locking bar relative to the front plate, a locking handle mounted on the back plate and when locked preventing rotation of the locking bar relative to the front plate, and an opening handle mounted on the back plate and connected to the locking bar for rotating the locking bar relative to the front plate.

[0005] Owing to the invention, it is possible to provide apparatus that can be used as an additional lock. The apparatus can be mounted on the door frame of, for example, a caravan door, that will provide additional security for the users of the caravan, which can also be easily locked and unlocked and opened from the inside. Such a door lock provides the users of the caravan with much increased security, as the structure of the lock makes it very difficult to force either the lock or the door that is being locked, from the outside. The design of the lock makes it very easy to mount on any caravan door frame and it provides improved security and ease of use. When fitted, the locking bar extends in front of the caravan door and prevents the opening outwards of the caravan door. In a preferred embodiment, the locking bar extends 10cm across and in front of the caravan door. This protects the caravan as any bending or pressure on the caravan door will still not provide a big enough gap to overcome the 10cm locking bar across the door. Since the lock fits to the door frame, it is virtually universal in application to

caravans, as any unusual features of the caravan door such as windows are irrelevant to the fitting of the door lock to the door frame.

[0006] Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view of the door lock from behind,

Figure 2 is an exploded perspective view of the door lock from in front,

Figures 3a and 3b are front views of the door lock in use,

Figure 4 is a bottom plan view of the door lock, and Figure 5 is a front perspective view of the door lock.

[0007] The door lock, shown from behind in Figure 1, comprises a front plate 10, and a locking bar 12 rotationally connected to the front plate 10 and extending beyond the front plate 10. In Figure 1, the locking bar 12 is shown in its "locked" position, extending horizontally or longitudinally from the front plate 10, which would prevent the opening outwards of any door secured by the lock, which is fitted to the door's frame. The locking bar 12 can rotate 90 degrees to an "open" position, extending vertically or perpendicularly from the front plate 10, which would then allow the door that the lock is securing to open outwards. A back plate 14 is connected to and behind the front plate 14. The door lock is intended to be fitted to a door frame as an additional security device for a door that opens outwards from the frame.

[0008] A locking mechanism 16 is mounted in the front plate 10, and when locked, prevents rotation of the locking bar 12 relative to the front plate 10. A locking handle 18 is mounted on the back plate 14 and when locked prevents rotation of the locking bar 12 relative to the front plate 10, and an opening handle 20 is likewise mounted on the back plate 14 and connected to the locking bar 12 for rotating the locking bar 12 relative to the front plate 10. The two handles 18 and 20 allow operation of the door lock from the inside of the door being secured. The handle 18 operates the locking mechanism 16 from the inside and the handle 20 operates the locking bar 12 from the inside.

[0009] Figure 2 shows an exploded view of the components that make up the door lock, in perspective from the front. The locking bar 12 is rotationally connected to the front plate 10 and the back plate 14 mounts the two handles 18 and 20. The door lock further comprises two bolts 22 and 24. The first bolt 22 connects the locking bar 12 through the front plate 10 and the back plate 14 to the opening handle 20 and the second bolt 24 connects the locking mechanism 16 through the front plate 10 and the back plate 14 to the locking handle 18. These square cross-section bolts 22 and 24 transfer the user's turning momentum from the respective handles 20 and 18 to the locking bar 12 and the locking mechanism 16, respectively.

[0010] The door lock also further comprises a plurality of connecting elements 26 connecting the front plate 10 to the back plate 14. The front plate 10 is spaced apart from the back plate 14 and the connecting elements 26 are used to connect the front plate 10 through the frame of the door being secured to the back plate 14. The connecting elements 26 can be screws, for example. The locking mechanism 16 is operated by a key 28. The lock also includes an annular plate 30 mounted on the first bolt 22 and provided with a plurality of indents 32, and a sliding plate 34 provided with a detent 36 for engaging an indent 32 of the annular plate 30, the sliding plate 34 connected to the locking mechanism 16.

[0011] An example of the door lock in use is shown in Figures 3a and 3b. A door 38 is being secured by the door lock. The door lock is fixed to a frame 40 of the door 38 and the door lock prevents the opening outwards of the door 38 when the door lock is in its secured position. In Figure 3a, the secured "locked" position is shown. The front plate 10 is fixed to the outside of the door frame 40 and locking bar 12 extends beyond the front plate 10 out in front of the door 12, while the door lock is in its secured position. The locking mechanism 16 is operated by a key in order to allow and prevent rotation of the locking bar 12 relative to the front plate 10.

[0012] The locking bar 12 can be locked by the locking mechanism 16 in a fixed number of different configurations. In Figure 3b, the locking bar 12 has been moved 90 degrees to its "open" position so that the door lock is in its unsecured position. The door 38 can now be opened as the locking bar 12 has been moved so that it is no longer blocking the opening outwards of the door 38. The locking mechanism 16 can be operated to lock the locking bar 12 in this open position, if needed. As described above, both the operation of the locking mechanism 16 and the locking bar 12 can be carried out from inside the door 38 being secured by the door lock. This allows a user to enter a caravan, for example, and close the locking bar 12 and lock the locking mechanism 12 behind them.

[0013] A bottom plan view of the door lock is shown in Figure 4. The front plate 10 mounts the locking bar 12 and the back plate 14 is spaced apart from the front plate 10 by the connecting elements 26. The two handles 18 and 20 are mounted on the back plate 14 and connect to the components on the front plate 10 via respective bolts 24 and 22. The locking handle 18 connects to the locking mechanism 16 via the bolt 24 and the opening handle 20 connects to the locking bar 12 via the bolt 22. The locking mechanism is locked and unlocked via the key 28. The spacing between the front plate 10 and back plate 12 can clearly be seen in this Figure.

[0014] A further view of the door lock is shown in Figure 5. In this view the locking bar 12 has been turned 90 degrees clockwise from its secured position to its open position. This would allow the door 38 being secured by the door lock to be opened outwards. The user of the door lock can unlock the locking mechanism with the key

28 and then move the locking bar 12 by hand into the desired position. The user can then lock the locking bar 12 in this position with the locking mechanism, or can leave the locking bar 12 unlocked and free to move. Once a user decides to secure the door to which the lock is fixed, then they can move the locking bar back to the horizontal position and lock the locking mechanism with the key 28.

Claims

1. Apparatus comprising:

- o a front plate (10),
- o a locking bar (12) rotationally connected to the front plate (10) and extending beyond the front plate (10),
- o a back plate (14) connected to and behind the front plate (14),
- o a locking mechanism (16) mounted in the front plate (10), and when locked preventing rotation of the locking bar (12) relative to the front plate (10),
- o a locking handle (18) mounted on the back plate (14) and when locked preventing rotation of the locking bar (12) relative to the front plate (10), and
- o an opening handle (20) mounted on the back plate (14) and connected to the locking bar (12) for rotating the locking bar (12) relative to the front plate (10).

2. Apparatus according to claim 1, and further comprising a first bolt (22) connecting the locking bar (12) through the front plate (10) and the back plate (14) to the opening handle (20).

3. Apparatus according to claim 1 or 2, and further comprising a second bolt (24) connecting the locking mechanism (16) through the front plate (10) and the back plate (14) to the locking handle (18).

4. Apparatus according to claim 1, 2 or 3, and further comprising a plurality of connecting elements (26) connecting the front plate (10) to the back plate (14).

5. Apparatus according to any preceding claim, wherein the front plate (10) is spaced apart from the back plate (14).

6. Apparatus according to any preceding claim, wherein the locking mechanism (16) is operated by a key (28)

7. Apparatus according to any preceding claim, wherein the locking bar (12) can be locked by the locking mechanism (16) in a fixed number of different con-

figurations.

8. Apparatus according to claim 1 or 2, and further comprising an annular plate (30) mounted on the first bolt (22) and provided with a plurality of indents (32), and a sliding plate (34) provided with a detent (36) for engaging an indent (32) of the annular plate (30), the sliding plate (34) connected to the locking mechanism (16).

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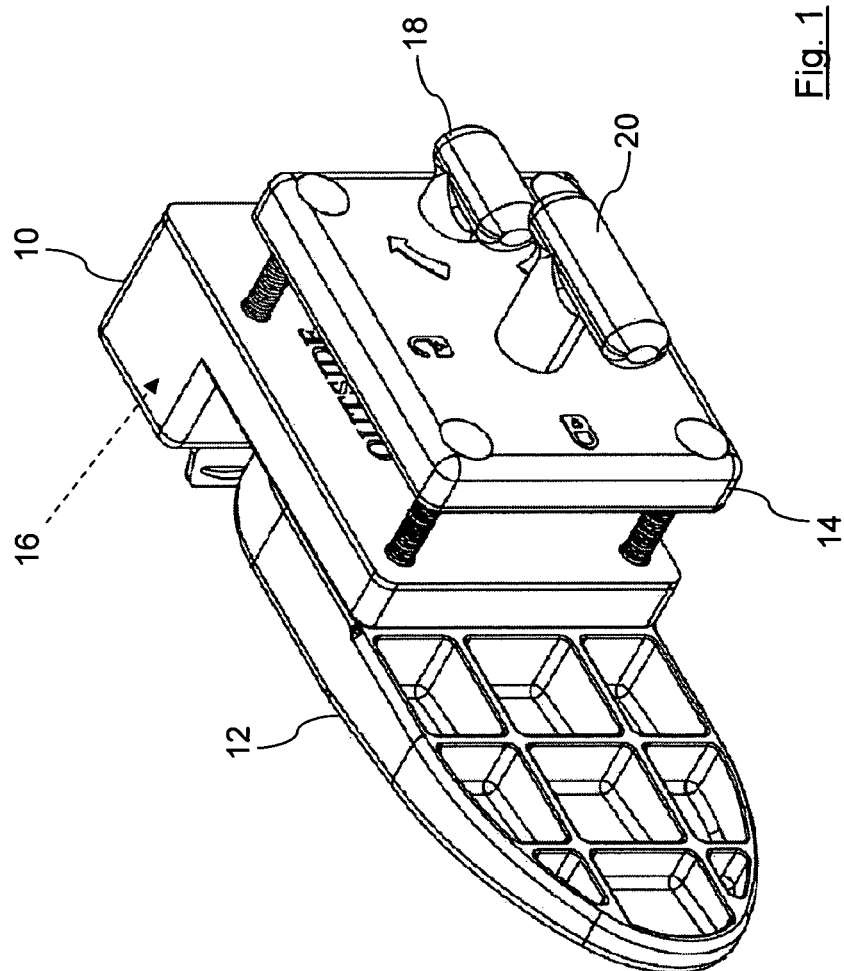
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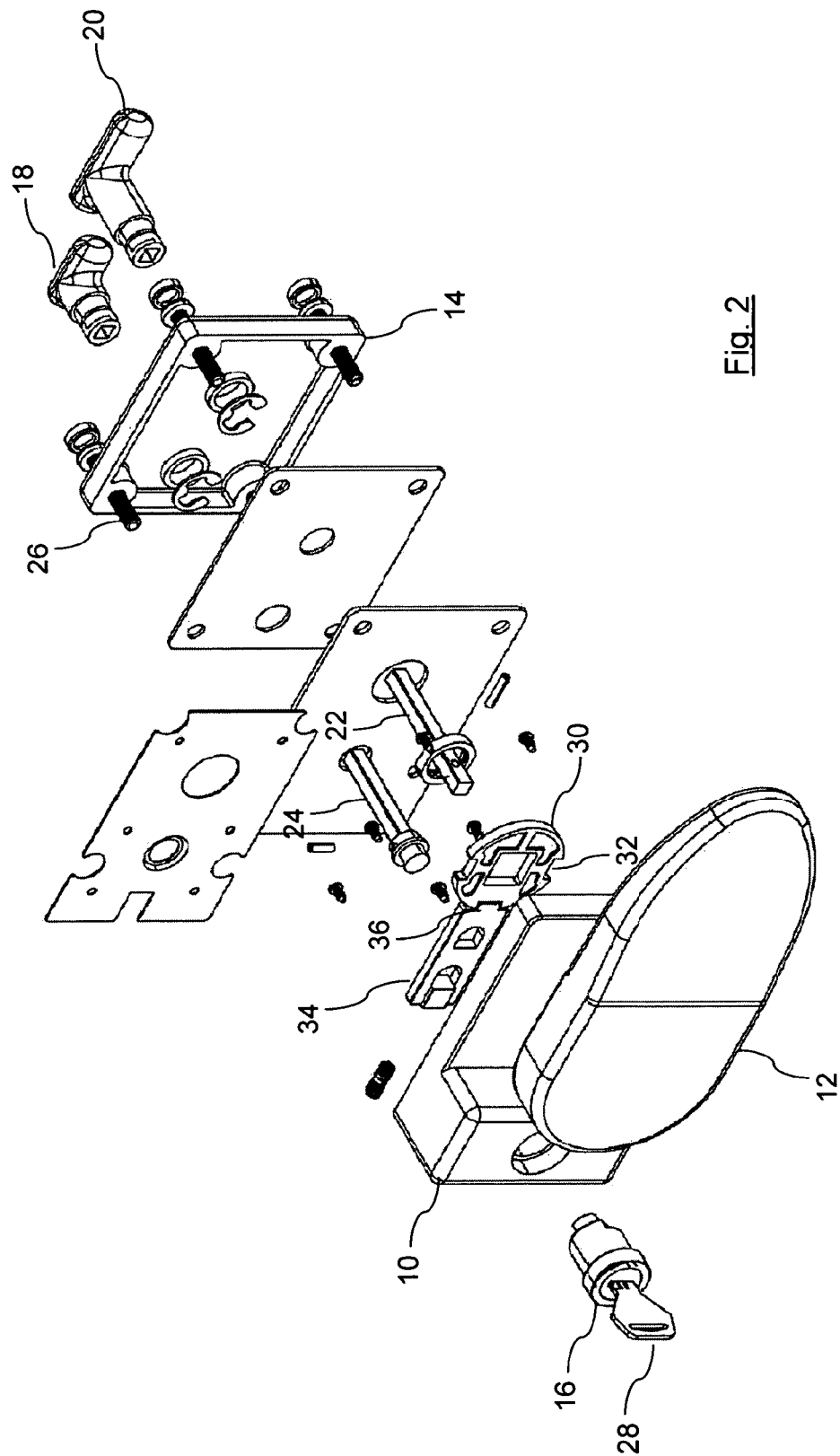
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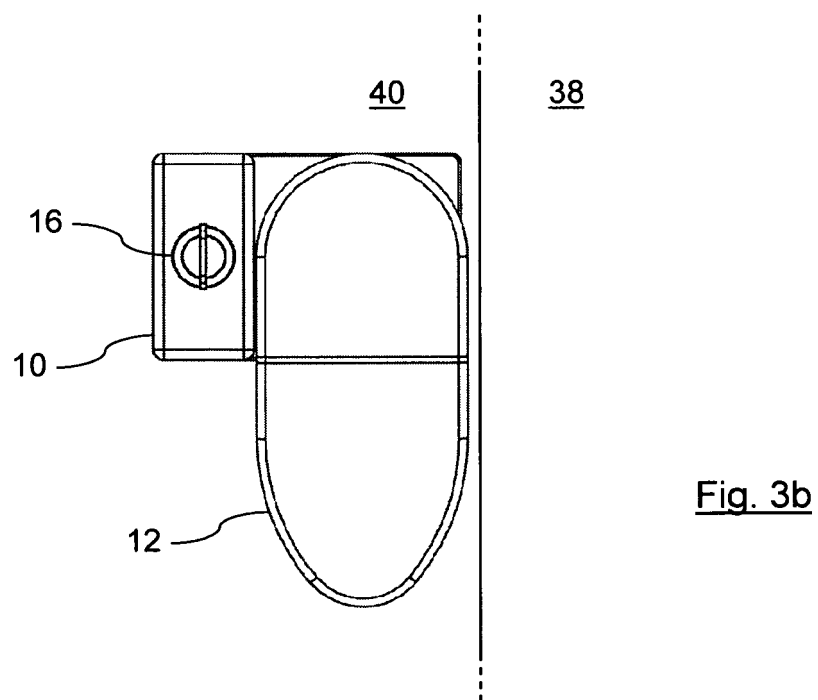
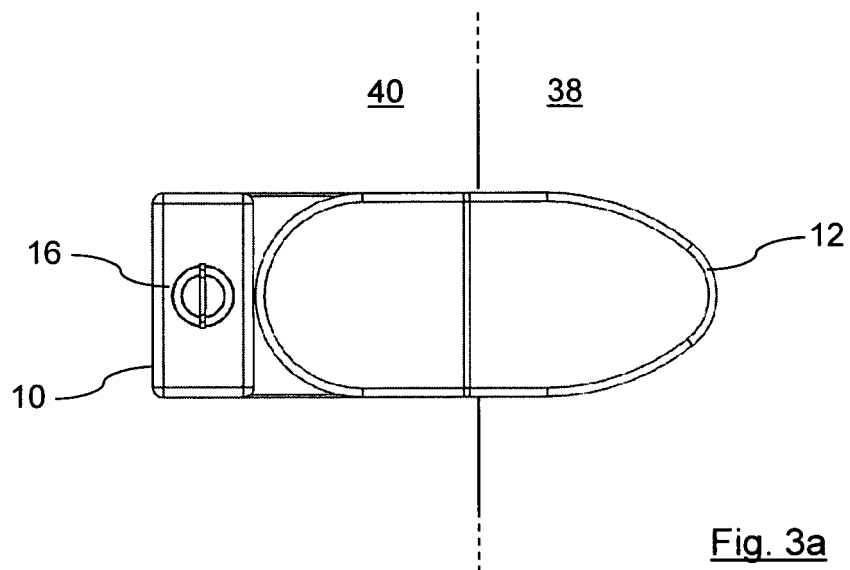
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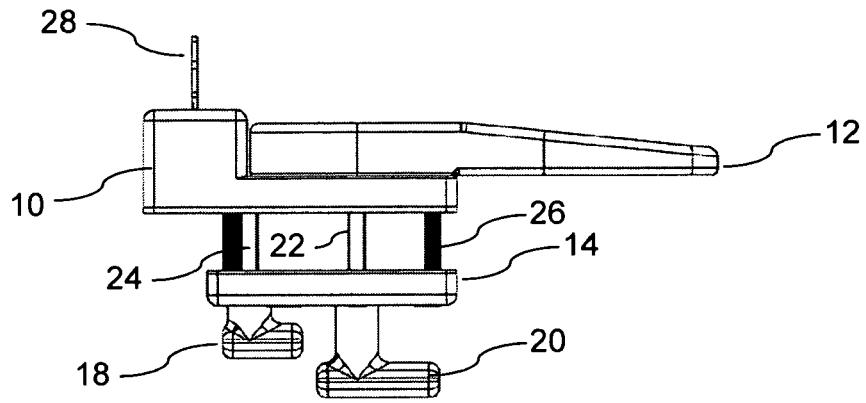


Fig. 4

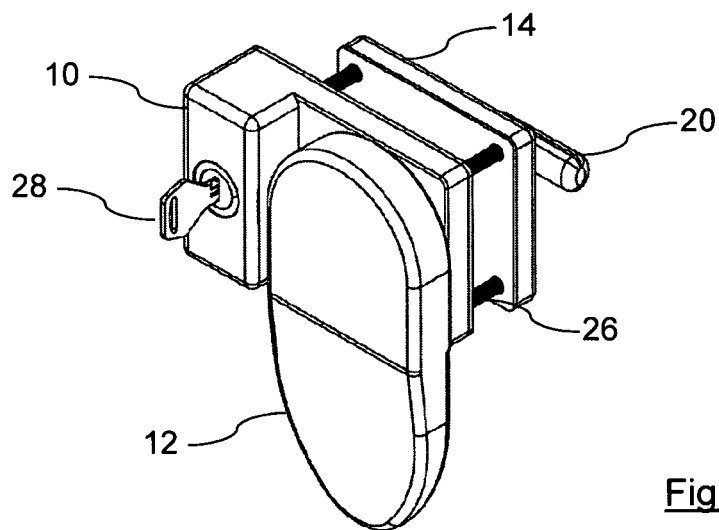


Fig. 5