

CLOSURE SECURING DEVICE

FIELD OF THE INVENTION

5 The present invention relates to a closure securing device, which secures a closure (such as a door or window) in a closed position as well as kits comprising the device and method of using the device.

BACKGROUND

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It is desirable to secure closures (such as doors and windows) of homes, business and other structures (e.g. superstructures such as ships). Closures such as hinged doors may offer insufficient security against forced entry as locking mechanisms are often unable to withhold the application of external force exerted by an intruder.

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A number of devices are known which provide additional security by bracing an inwardly swinging door against forced entry. For example, US 2004/007217, US 2002/180221, US 5,131,701 and US 4,300,796 each disclose devices for securing doors in which the bracing member is at an acute angle to the door. Such devices are adapted to contact with the spindle of a door handle or knob at one end and are equipped with a foot having some form of gripping means at the other which contacts a surface (e.g. the floor) in the vicinity of the door. However, such devices have a number of drawbacks. For example, such devices do not impede the operation of the locking mechanism (e.g. the latch mechanism) on doors and windows. Additionally, by use of considerable pressure and/or by use of a rocking action such devices may lose some grip on the surface thereby resulting in slippage of the device which may enable forced entry.

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US 4,036,518 discloses a bracing device which comprises a pair of pivoting jaws intended to grip the stem of the knob of the door and in which the bracing member is at an acute angle with respect to the door. This is to attempt to address the problem of rocking of the door causing slippage of the device. However, this mechanism is insufficient to prevent movement of the latch mechanism to an open position when force is applied.

Accordingly, there exists a need for an improved closure securing device which provides an increased level of security against forced entry.

5 SUMMARY OF THE INVENTION

The present invention relates to a device for preventing the opening of a latch on a closure such as a door or window, the device including a rod-like bracing member having, at one end, means for engaging the lever of latch mechanism of the closure and, at the other end, means for engaging a surface located in the vicinity of the closure (e.g. the floor or window sill), wherein in operation the bracing member may brace the lever of the latch mechanism in a closed position; wherein the rod-like bracing member is extendible and contractible in length. Suitably, the bracing member may exert pressure on the lever of the latch mechanism towards a closed position

Such a device advantageously works by reinforcing and bracing the latch mechanism of a closure (e.g. a door) in a closed position. Advantageously by holding the latch mechanism in a closed position inhibits movement in the door. Therefore, a would-be intruder cannot use a rocking action to attempt to dislodge the device and force entry.

The bracing member may be adaptable to be parallel to the closure whilst exerting pressure on the lever (e.g. handle) of the latch mechanism (i.e. lockset). Having the bracing member substantially parallel to the closure (e.g. door) is advantageous as it decreases the likelihood of the device being rattled loose.

Suitably, the rod-like bracing member may be a telescoping member being extendible and contractible in length. The rod-like bracing member may have a mechanism (e.g. a ratchet mechanism) which inhibits contraction of the telescoping member in use.

Suitably the device may comprise a ratchet mechanism to inhibit contraction of the rod-like bracing member and optionally, to exert pressure on the closure or lever of the latch mechanism of the closure towards a closed position, thereby providing an increased level of resistance to forced entry.

Suitably, the device may comprise a foot plate the underside of which may be adapted for gripping engagement with the surface. Suitably, the footplate may engage with the rod-like bracing member via a ball and socket joint.

5 The present invention further relates to a kit for preventing the opening of a latch on a closure, said kit comprising a device in accordance with the invention and an internal connector. Optionally, the kit may comprise one or more additional rod-like bracing members.

10 The present invention also relates to a method for securing a closure comprising placing a device of the invention between either:

- a) the lever of a latch mechanism of a closure and a surface in the vicinity of closure or
- b) the closure and a surface in the vicinity of the closure.

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Advantageously, placing the device between the lever of the latch mechanism of a closure and a surface in the vicinity of the closure braces the latch mechanism and restricts movement of the closure. Advantageously, such placement allows the device to secure hinged closures regardless of whether they outwardly or inwardly swing.

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When the device comprises a ratchet mechanism suitably the trigger of the ratchet mechanism is actuated to secure the device in place and/or to exert pressure on the closure and/or lever of a latch mechanism of the closure. Thus, the device may provide considerable bracing capacity to provide added security.

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Suitably the main body of the device (i.e. the portion comprising the rod-like bracing member) may be positioned substantially parallel to the closure.

BRIEF DESCRIPTION OF THE DRAWINGS

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Figure 1 is a frontal view of a device in accordance with an embodiment of the invention.

Figure 2 is an alternative view of a device in accordance with the embodiment of Figure 1.

Figure 3 is a side view of the ratchet mechanism of the device in accordance with the embodiment of Figure 1.

Figures 4a and **4b** show the upside and the underside of a footplate in accordance with the embodiment of Figure 1.

Figure 5 is a side view of an internal connector which may be used to connect one rod-like bracing member with an outer casing on accordance with the embodiment of Figure 1 to another.

Figure 6 is a side view of the device in accordance with Figure 1 in use.

Figure 7 is an elevated view of the device in accordance with Figure 1 when used to brace the closure as opposed to the latch mechanism on the closure.

Figure 8 shows an open circular socket which may be used as an alternative to the rubber ferrule shown in Figure 1 as a means for engaging the lever of latch mechanism of the closure.

Figure 9 shows the device of Figure 1 with the alternative means for engaging the lever of latch mechanism of the closure of Figure 8 in use.

Figure 10 shows a U shaped socket which may be used as an alternative to the rubber ferrule shown in Figure 1 as a means for engaging the lever of latch mechanism of the closure

DESCRIPTION

FIG. 1 is a front view of a device **1** in accordance with an embodiment of the invention. The device is portable and may attach to many different types of closures including both outwardly-swinging and inwardly-swinging doors and the like. The

device attaches easily to a closure by, for example, engaging with the door handle **2** of the latch mechanism of the closure and a surface in the vicinity of the closure, such as a floor **3**. The device may be placed directly underneath the door handle **2** and by operating the ratchet mechanism **4** by actuation of the trigger **5**, the ratchetable rod-like bracing member **6** is extended and applies direct pressure to the underside of the door handle **2**. When set in the shown securing position, the device **1** prevents the door from being opened by bearing against the floor **3** and the underside of the door handle **2**, inhibiting operation of the door handle **2** and thereby inhibiting the opening of the latch. The device **1** can be easily removed from the door when not in operation and retracts to a more compact length.

The device **1** comprises a rod-like bracing member **6** encased in an outer casing **7** and having at one end means for engaging the lever (e.g. door handle) of the latch mechanism (i.e. lockset) of the closure (e.g. door **8**) and at the other end means for engaging the a surface **9** (e.g. floor) in the vicinity of the closure.

The rod-like bracing member **6** may be made of any material suitable to withstand external force being exerted by a would-be intruder such as e.g. metal or wood. A suitable material would be metal which is sufficiently durable and also aesthetically pleasing to the consumer. It will be readily understood that the length of the rod-like bracing member will be dependent on the type of closure that the device is to be used on and, when used to brace the latch mechanism, the length will be dependent on the positioning of the latch mechanism on the closure. In the specific embodiment of **FIG 1** the rod-like bracing member **6** is a metal rod approximately 800mm in length and 10mm diameter. However, the dimensions of the rod-like bracing member **6** may be any dimensions suitable to achieve the desired purpose of securing the closure.

The rod-like bracing member may be encased in an outer casing **7** as shown in **FIG. 1**. The outer casing **7** may provide protection for e.g. an internal ratchet mechanism and/or may aid the rigidity of the device. One suitable material for the outer casing is mild steel. The length of the outer casing may be approximately the same as that of the rod-like bracing member **6**. For example, in the specific embodiment of **FIG 1** the outer casing **6** is a mild steel tube approximately 800mm in length and approximately 25mm diameter.

As shown in **FIG 1**, the upper end of the rod-like bracing member **6** engages with the handle of the door latch mechanism to inhibit movement of the door handle **2** and opening of the latch (not shown). In the specific embodiment of **FIG. 1** a rubber ferrule is used to engage the door handle **2**. However, the means of engagement may take many forms, for example a U shaped handle fork would also be appropriate such as that shown in **FIG. 11** or an open circular socket as shown in **FIG. 8**. Preferably the means of engaging the device with the door latch mechanism is made of or coated in a material which aids grip of the lever (e.g. door handle) of the latch mechanism of the closure.

The lower end of the rod-like bracing member **6** engages with a surface in the vicinity of the closure such as the floor **3** in **FIG. 1**. Any means of engagement providing traction will suffice. Preferably said means will be comprised of, or at least a portion of the surface contacting area will be coated or affixed with a material which aids traction of the device with the surface. The means of engagement with the surface may be integral with or a separate component of the device. In the specific embodiment depicted in Fig 1, a floorplate **9** is used.

FIG 2, shows the optimal positioning of the device **1** directly under the door handle **2** such that the rod-like bracing member **6** is substantially parallel to the door **9**. This positioning provides optimal pressure on the door handle **2** and further reduces the likelihood of the device slipping when external pressure is applied.

FIG 3, shows the ratchet mechanism of the device of **FIG 1**. Use of a ratchet mechanism provides an easy way to apply substantial pressure to inhibit movement of the latch mechanism or the closure when the device is in the secured position (see the alternative positioning of the device in **FIG. 7**). For example, via use of the ratchet system the device **1** is able to exert a direct pressure of up to 80kg. Manual actuation of the trigger **5** repeatedly causes the ratchet mechanism **4** to ratchet the rod-like bracing member towards the floor **2** as shown in **FIG. 1**. Whilst a ratchet mechanism is shown in this embodiment other mechanisms which can apply pressure to the latch mechanism or the closure when the device is in the secured position may be used. A black plastic ball **10** is affixed to the end of the rod-like bracing member to provide engagement with the footplate **9**.

FIG 4a and **FIG 4b** show the upper and underside, respectively of the footplate **9**. On the upper side of the footplate **9** comprise a universal ball-joint receptor **11** into which the black plastic ball **10** may be pushed and snapped into place to connect the footplate **9** with the rod-like bracing member **6**. The use of a ball-joint allows the device to be installed at angles from the preferred 90° to the floor to 45°. The underside **FIG 4b** is fitted with a plastic push **12** to provide traction and the surface of the underside is substantially level for optimal contact with a fixed surface. Suitably, the footplate may be made of any durable material and may be of a hard plastic construction. The dimensions and construction of the footplate allow for traction with the surface to which it is applied.

FIG 5 shows an internal connector **14** which may be used to attach two rod-like bracing members **6** together allowing for ease of adaption of the length of the device **1** according to need.

FIG 6 shows multiple uses of the device of **FIG 1**. In addition or as an alternative to the disclosed use to inhibit movement of the latch mechanism **13** of a closure, the device **1** may also be used to brace the closure itself **12**. Thus, the device of this embodiment is multifunctional and can adapt to the environment in the vicinity of the closure.

FIG 7 shows the connection of two rod-like bracing members within an outer casing which are connected via the internal connector as shown in **FIG 5**. As can be seen from **FIG 7** the device **1** may be used to brace the closure itself by providing pressure between the closure and the stairs through actuation of the ratchet mechanism **4**.

FIG 8 shows an alternative means for engaging the lever of latch mechanism of the closure in the form of an open circular socket **15**. This socket **15** can fit directly onto the end of the outer casing **7** at the opposite end to the ratchet mechanism **4**. This may be secured in place by any suitable means such as an Allen key type nut and bolt configuration shown **16** which when tightened it clamps directly around the outer casing.

FIG 9 shows the alternative embodiment with the open circular socket **15** in use. The open circular socket **15** is at a horizontal angle and slides over the door handle to encapsulate it. When the ratchet mechanism **4** is operated this causes the device **1** to apply a vertical pressure on the door handle. The socket **15** applies opposite pressures
5 on the top and bottom parts of the door handle **2** and it is this friction that prevents the device **1** from being dislodged.

FIG 10 shows an alternative means for engaging the lever of latch mechanism of the closure in the form of U socket **17**. This socket **17** can fit directly onto the end of the
10 outer casing **7** at the opposite end to the ratchet mechanism **4**. This may be secured in place by any suitable means such as by a simple push on fit.

A device of the present invention may find particular utility for applications where a high level of resistance to forced entry is required such as on superstructures such as
15 ships. Furthermore, the device of the present invention may further have utility to prop open a closure when required.

CLAIMS

1. A device for preventing the opening of a latch on a closure, the device including a rod-like bracing member having, at one end, means for engaging the lever of latch mechanism of the closure and, at the other end, means for engaging a surface located in the vicinity of the closure, such that in operation the bracing member braces the lever of the latch mechanism in a closed position; wherein the rod-like bracing member is extendible and contractible in length.
2. The device of claim 1 wherein the bracing member is adaptable to be parallel to the closure whilst bracing the lever of the latch mechanism in a closed position.
3. The device of claim 1 or claim 2 wherein in operation the rod-like bracing member exerts pressure on the lever of the latch mechanism towards a closed position.
4. The device according to any one of claims 1 to 3 wherein the rod-like bracing member is a telescoping member being extendible and contractible in length.
5. The device of any one of the preceding claims wherein the device comprises a ratchet mechanism to inhibit contraction of the rod-like bracing member in use.
6. The device of any one of the preceding claims wherein the means for engaging a surface in the vicinity of the closure comprises a foot plate the underside adapted for gripping engagement with the surface.
7. The device of claim 6 wherein the footplate engages with the rod-like bracing member via a ball and socket joint.

8. The device of any one of the preceding claims wherein the means for engaging the lever of the latch mechanism comprises rubber or is in the form of an open circular or U shaped socket.
9. A kit for preventing the opening of a latch on a closure, said kit comprising a device in accordance with any one of claims 1 to 8 and an internal connector.
10. A method for securing a closure comprising placing a device in accordance with any one of claims 1 to 7 between either:
 - a) the lever of a latch mechanism of a closure and a surface in the vicinity of closure or
 - b) the closure and a surface in the vicinity of the closure.
11. A method according to claim 10 wherein the device comprises a ratchet mechanism and the trigger of the ratchet mechanism is actuated to exert pressure on the closure and/or lever of a latch mechanism of the closure.
12. A method according to claim 10 or claim 11 wherein the main body of the device is substantially parallel to the closure.
13. A method according to any one of claims 10 to 12 wherein the closure is a door on a ship.
14. A device according to claim 1 and as substantially herein described.
15. A method according to claim 10 and as substantially herein described.