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(54) **Title**: SECURE LOCKING DEVICE FOR A SUPPORT STAND

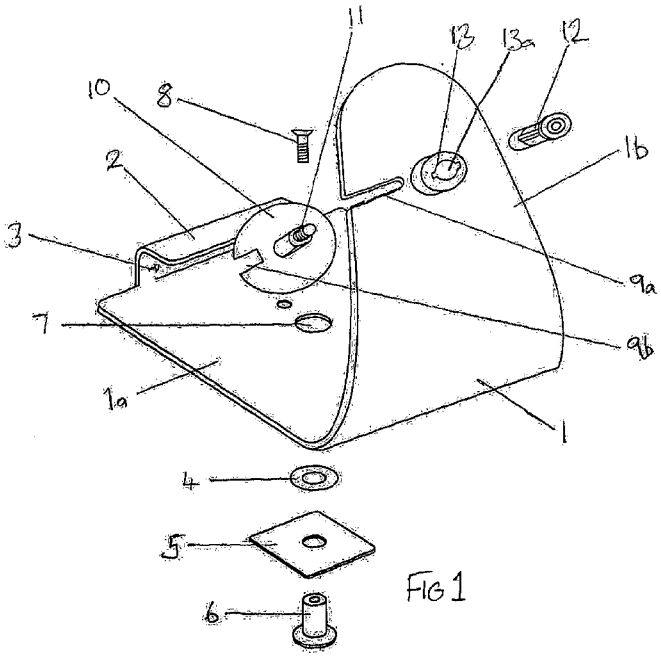

FIG 1

(57) **Abstract**: A locking device for a computer support stand comprises a stand (1) having base portion 1a and an upright portion (1b). A lip (2) extends from the base portion 1a providing a recess (3) into which an end of support stand (not shown) can be received. A washer (4), washer plate (5) and flat flanged, internally threaded spigot (6) are aligned below an aperture (7) in the base portion 1a. During assembly, the desktop (30) is sandwiched between washer (4) and plate (5). A screw (8) is positioned on the opposite side of the aperture (7) and configured for threading into the internally threaded (spigot 6). The aperture (7) is counter sunk to receive the head of the screw (8) ensuring a flat surface of the base portion 1a is maintained. A slot 9a is provided in the upright portion 1b and a corresponding slot (9b) is provided in a locking plate (10) includes a spigot portion (11) with a screw threaded end which is configured to engage in a lock (12). A barrel (13) for the lock (12) is integral with the upright portion (1b) and includes a channel 13a shaped at both ends to prevent rotational movement of the lock (12) and spigot (11) when assembled.

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Secure Locking Device for a Support Stand

The present invention provides a novel device to secure a computer, a display monitor, TV or the like to a workspace in an aesthetic manner and with minimal effort. The invention has wide application wherever electrical equipment is support on a stand and needs to be securely fastened in a location. Whilst typically a desktop, the location could be a post, wall or other fixed surface.

In recent years powerful computers have been provided in increasing compact and lightweight forms. This change has made these valuable and useful pieces of equipment attractive targets for thieves. It has become common for large numbers of computers to be provided in open plan office areas, school ICT suites, public libraries and the like where many people have and need regular access to the buildings. Ensuring security of the equipment is an ever growing problem.

Devices for locking computers to desks, for example by cages, cables, clamps and bolts are known but all have disadvantages. Many are unsightly and add clutter to a workspace. Others are fairly easily and quickly disassembled with appropriate tooling, for example by loosening of accessible nuts or cutting of bolts or cables.

The present invention provides a discrete and secure security device which does not suffer from the drawbacks identified in the prior art.

In accordance with the present invention there is provided a locking device configured for securing a support stand of a computer or monitor to a desk top, the locking device comprising; a stand having base and upright sections and contoured to receive a support stand and, in use, to contact the support stand with at least a portion of the base and the upright sections, the base section further including an extended portion

extending in a substantially parallel plane providing a slot, groove or recess into which, in use, a support stand can be received and an aperture through which the base portion can be secured; the upright portion including an open ended slot configured for receiving cable; a fastener for fastening the base portion to a desktop through the aperture, the fastener comprising a flat flanged, internally threaded spigot, a bolt configured to be threaded into the internally threaded spigot, a washer and a washer plate; a lock adjacent the open ended slot and a locking plate having a open ended slot arranged to coincide with the open ended slot of the upright portion when the lock is engaged.

In one specific application for slim-line computers such as, for example, the Apple® iMac®, a desktop is drilled at a location where a support stand for the computer is to be located. The washer, washer plate and flat flanged internally threaded spigot are located about the drilled hole on the underside of the desktop. The stand is positioned with the aperture over the drilled hole and the bolt is inserted and threaded tightly into place. The, washer, plate and flat flanged, internally threaded spigot arrangement leave little access beneath the desk for tampering with the bolts.

With the stand secured to the desktop a support stand is received in the stand of the locking device with a portion of its base enveloped by the extended portion, the base portion of the stand covers the screw head blocking access to the screw head.

With the support stand in position an aperture is provided through the support stand to coincide with the open ended slot and lock of the upright portion of the stand. The locking plate is then engaged with the lock through the aperture securing the support stand both to the stand of the locking device and the desktop. The stand, support stand and desktop assembly can only be disassembled by opening the lock. Provide a strong

and secure lock is used, there is little scope for unauthorised removal of the computer and support stand from the premises in which it is secured.

Though not essential, it is desirable that the stand has a contour which follows exactly the contour of a support stand to which is to be fixed. This provides a much more aesthetic assembly when the stand is installed and improves security by minimising access to the stand and any lock fastening the stand to the support stand. It is also desirable that the stand is shaped to match the shape of the support stand as well as its contour.

In one simple embodiment, the extend portion of the base comprises one or more lips configured to wrap over an edge of the support stand when installed. In alternative embodiments, the extended portion might comprise one or more bars configured to enclose the support stand at two edges. In another alternative the extended portion might comprise and enclosed recess into which an end portion of the support stand can be received.

Whilst not essential, it is desirable that the slots provided in the locking plate and upright portion are of similar width, desirably, when the locking plate is located, the edges of the slots will align in parallel.

The components of the locking device are conveniently made predominantly from strong metal materials. The lock is desirably an anti-tamper an anti drill lock, examples of which will be known to the reader and are commonly available from suppliers at the time of making this application.

The locking plate desirably includes a protrusion for locating in the aperture in the upright portion. The protrusion and aperture are desirably shaped so that the plate can be located with its slot in direct alignment with the slot of the upright and also to prevent rotation of the plate when

in situ. For example, the protrusion and aperture may share a common circular cross section which has at least one flattened section on its circumference.

The lock for the upright portion is preferably integrated with the stand, the locking plate being separately affixed to the assembly. In an alternative, the upright portion may be configured to serve as the locking plate, the lock being provided on a separate, slotted plate.

An embodiment of the invention will now be described for illustrative purposes. The embodiment is configured specifically to secure the support stand of an Apple® iMac®. It will be appreciated that with some non-inventive changes to the shape and contour of the stand, embodiments of the device can be provided to suit a wide range of support stand security applications.

The embodiment is described with reference to the accompanying Figures in which:

Figure 1 shows an exploded view of the components of the device of the invention in perspective.

Figure 2 shows a face on view of the embodiment of Figure 1 adjacent an Apple® iMac® support stand.

Figure 3 shows in three consecutive steps the assembly of the embodiment of Figures 1 and 2 to a desktop and Apple® iMac® support stand.

As can be seen from Figure 1 the device comprises a stand 1 having base portion 1a and an upright portion 1b. A lip 2 extends from the base portion 1a providing a recess 3 into which an end of support stand (not

shown) can be received. A washer 4, washer plate 5 and flat flanged, internally threaded spigot 6 are aligned below an aperture 7 in the base portion 1a. During assembly, the desktop 30 is sandwiched between washer 4 and plate 5. A screw 8 is positioned on the opposite side of the aperture 7 and configured for threading into the internally threaded spigot 6. The aperture 7 is counter sunk to receive the head of the screw 8 ensuring a flat surface of the base portion 1a is maintained.

A slot 9a is provided in the upright portion 1b and a corresponding slot 9b is provided in a locking plate 10 includes a spigot portion 11 with a screw threaded end which is configured to engage in a lock 12. A barrel 13 for the lock 12 is integral with the upright portion 1b and includes a channel 13a shaped at both ends to prevent rotational movement of the lock 12 and spigot 11 when assembled.

Figure 2 shows the device alongside a support stand 20 for an Apple® iMac® which is provided with an aperture 21 for passing through keyboard and power cables (not shown). It can be seen, the aperture 13a and slots 9a, 9b are aligned with the aperture 21 of the support stand 20. In use, cables pass through the aperture 21 and slots 9a, 9b and are securely enclosed with minimum effort. The shape of the aperture 13a can be seen as slightly oval or D shaped.

Figure 3 shows the component parts arranged around and being fitted to an Apple® iMac® support stand and desktop 30. The lock 12 is secured in position by a key 14.

Instructions for installing the device are given below.

Position the stand in the location required on the desk. Using a pen mark the centre hole. Using a 12mm drill bit, drill a hole in the desk on the marked position ensuring the drill is perpendicular to the desk. From

underneath, push through the internally threaded spigot and square washer plate.

Place the nylon washer on the desk over the hole and overlay the stand. The 20mm M8 bolt can be used on desks up to 30mm thick.

It is desirable to put a couple of drops of thread inhibitor (supplied separately) on the thread of the countersunk bolt and tighten the bolt using an appropriate allen key.

2. Slide the iMac® on to the stand from the left hand side when looking from the rear.

3. Thread power cable and any USB cables (such as keyboard) through the slots on the lock assembly. The lock assembly can now be offered to the iMac® stand. See back page. Insert the lock assembly through the hole in the iMac® stand and locate in the housing. Turn the key clockwise until the lock assembly is pulled tight onto the iMac® stand, then back the key of a quarter turn and remove the key.

The shown embodiment has been specifically developed to fulfil the need for a discreet and high-tech security clamp for Apple® iMac® computers and other units with a hole in the stand. The figure hugging stand can be provided in different sizes to cater for the complete iMac® range. All units are fitted with a unique locking system which comprises of a high security anti-tamper and anti-drill lock and specially manufactured circular locking plate which secures the computer through the hole on the middle of the stand. The clamp is permanently attached to a desk, table or bench top with a specially designed locking nut and bolt arrangement which allows the unit to rotate, making it ideal for a teaching / working environment.

Unique locking system stand to worktop

The specially designed M8 threaded internally threaded spigot has been designed so when fitted it is not possible to undo with any tool as it has a shallow angled head.

Once the desk/worktop has been drilled, the M8 internally threaded spigot is placed in the 75mm square washer plate and is offered up to the underside of the desk where it is inserted into a pre drilled hole. A thin nylon shim washer is placed over the drilled hole on top of the desk before the stand is put in place. The washer acts as a cushion and allows an easy rotation of the stand and computer. The stand is placed over hole and nylon shim washer. An M8 countersunk allen bolt drops through the stand and is tightened into the M8 internally threaded spigot. An additional fixing can be provided to stop the assembly rotating by using counter sunk wood screws. A counter sunk hole has been provided at the front of the unit. When the computer support stand is slid onto the stand it covers the M8 countersunk bolt and therefore blocks access with a tool/allen key to remove the unit. The shallow angled head of the M8 internally threaded spigot under the desk/worktop does not cater for any tool.

Unique locking system stand to computer stand

With the computer stand in place the hole in the computer stand will align with a 'D' shaped hole in the stand. The circular security locking plate and threaded 'D' shaped peg are offered up through the computer stand and locate into the stand lock housing. With the key in the lock at the rear of the unit, the key is turned clockwise and draws the locking plate closer and eventually it will sandwich the computer stand. When tight, the key is backed off approximately a quarter turn and removed. The circular locking plate cannot be undone due to the 'D' shape on the peg and stand housing.

Security of the power cable and keyboard/longer mouse cables

The stand can also trap the power cable and keyboard cables of the computer. The design of the stand allows for the entrapment of the cables. A horizontal slot is provided in the stand circular locking plate. To secure, the computer cables are threaded through the hole in the computer stand. The computer stand is slid onto the stand and the cables are guided through the provided slot. The security lock plate is offered up to the stand and the key turned to tighten the lock plate. The cables are now trapped as there is no room to pull the end of each cable through.

Summary of components

1 Secure stand mimics the shape and pattern of the Apple® iMac® computer stand.
2 M8 threaded nut with shallow angled head
3 75mm square washer plate
4 Small circular nylon shim washer
5 M8 countersunk allen screw
6 Circular security locking plate with threaded peg
7 High security 'Turn' lock (vending lock).

CLAIMS

1. A locking device configured for securing a support stand of a cable or monitor to a desk top, the locking device comprising; a stand having base and upright sections and contoured to receive a support stand and, in use, to contact the support stand with at least a portion of the base and the upright sections, the base section further including an extended portion extending in a substantially parallel plane providing a slot, groove or recess into which, in use, a support stand can be received and an aperture through which the base portion can be secured; the upright portion including an open ended slot configured for receiving cable; a fastener for fastening the base portion to a desktop through the aperture, the fastener comprising a flat flanged, internally threaded spigot, a bolt configured to be threaded into the internally threaded spigot, a washer and a washer plate; a lock adjacent the open ended slot and a locking plate having a open ended slot arranged to coincide with the open ended slot of the upright portion when the lock is engaged.

2. A locking device as claimed in claim 1 wherein the stand has a contour which follows exactly the contour of a support stand to which is to be fixed.

3. A locking device as claimed in claim 2 wherein the stand is shaped to match the shape of the support stand as well as its contour.

4. A locking device as claimed in any preceding claim wherein the extended portion of the base comprises one or more lips configured to wrap over an edge of a support stand when installed.

5. A locking device as claimed in any of claims 1 to 3 wherein the extended portion comprises one or more bars configured to enclose the support stand at two edges.

6. A locking device as claimed in any of claims 1 to 3 wherein the extended portion comprises an enclosed recess into which an end portion of the support stand can be received.

7. A locking device as claimed in any preceding claim wherein the slots provided in the locking plate and upright portion are of similar width, and in use, when the locking plate is located, the edges of the slots align in parallel.

8. A locking device as claimed in any preceding claim wherein the locking plate includes a protrusion for locating in the aperture in the upright portion.

9. A locking device as claimed in claim 8 wherein the protrusion and aperture are shaped so that the plate can be located with its slot in direct alignment with the slot of the upright portion and also to prevent rotation of the plate when in situ.

10. A locking device as claimed in any preceding claim wherein the lock for the upright portion is integrated with the stand, the locking plate being separately affixed to the assembly.

11. A locking device as claimed in any of claims 1 to 9 wherein the upright portion is configured to serve as the locking plate, the lock being provided on a separate, slotted plate.

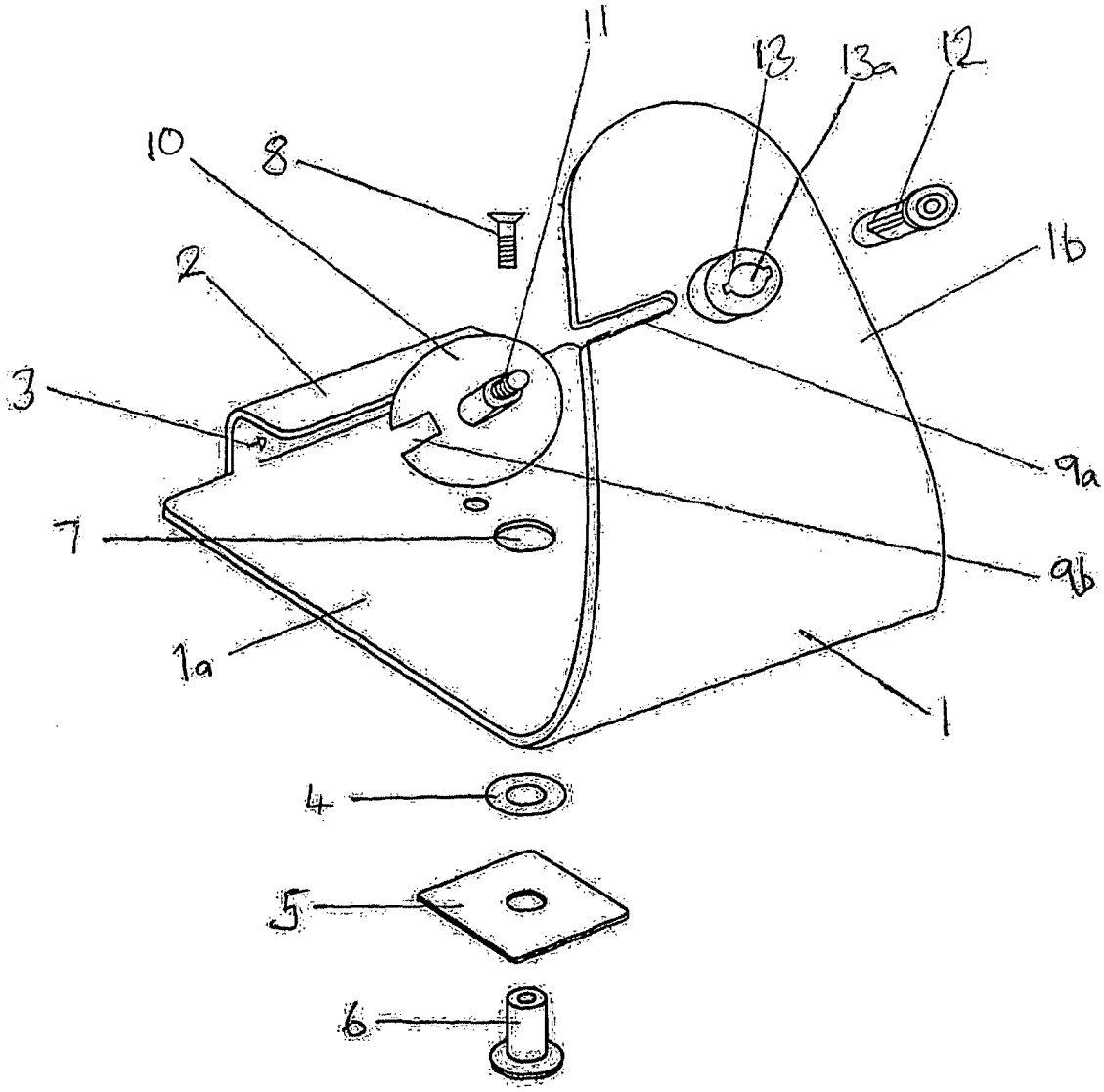

FIG 1

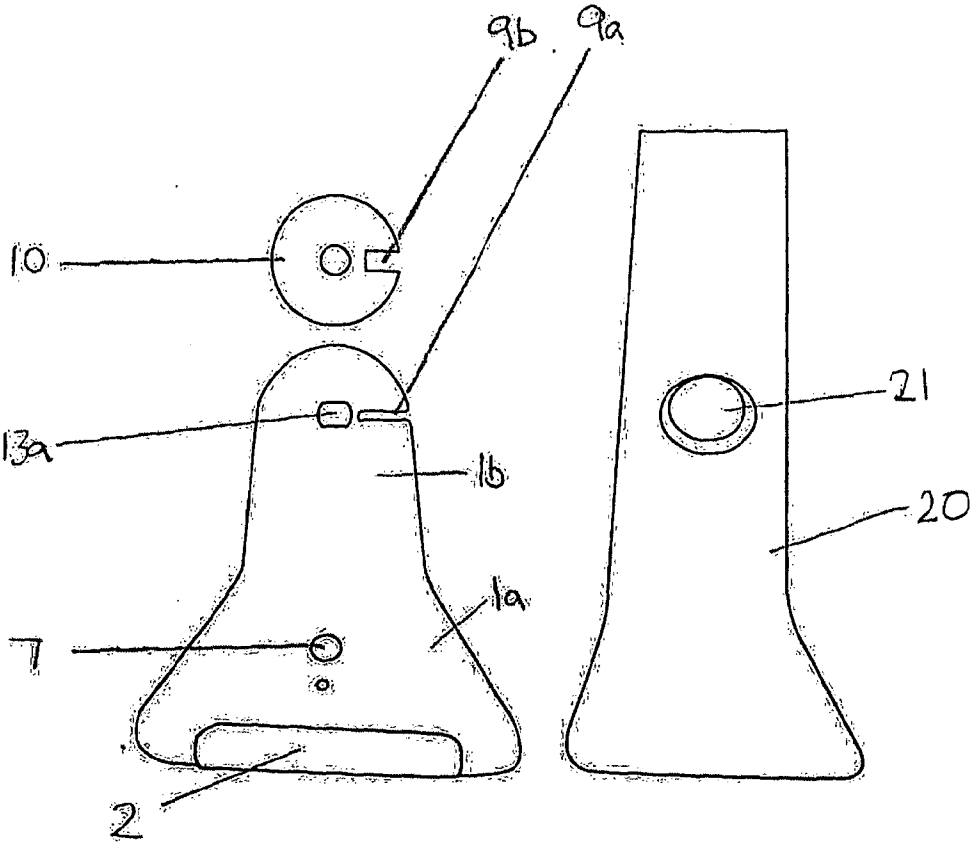

FIG 2

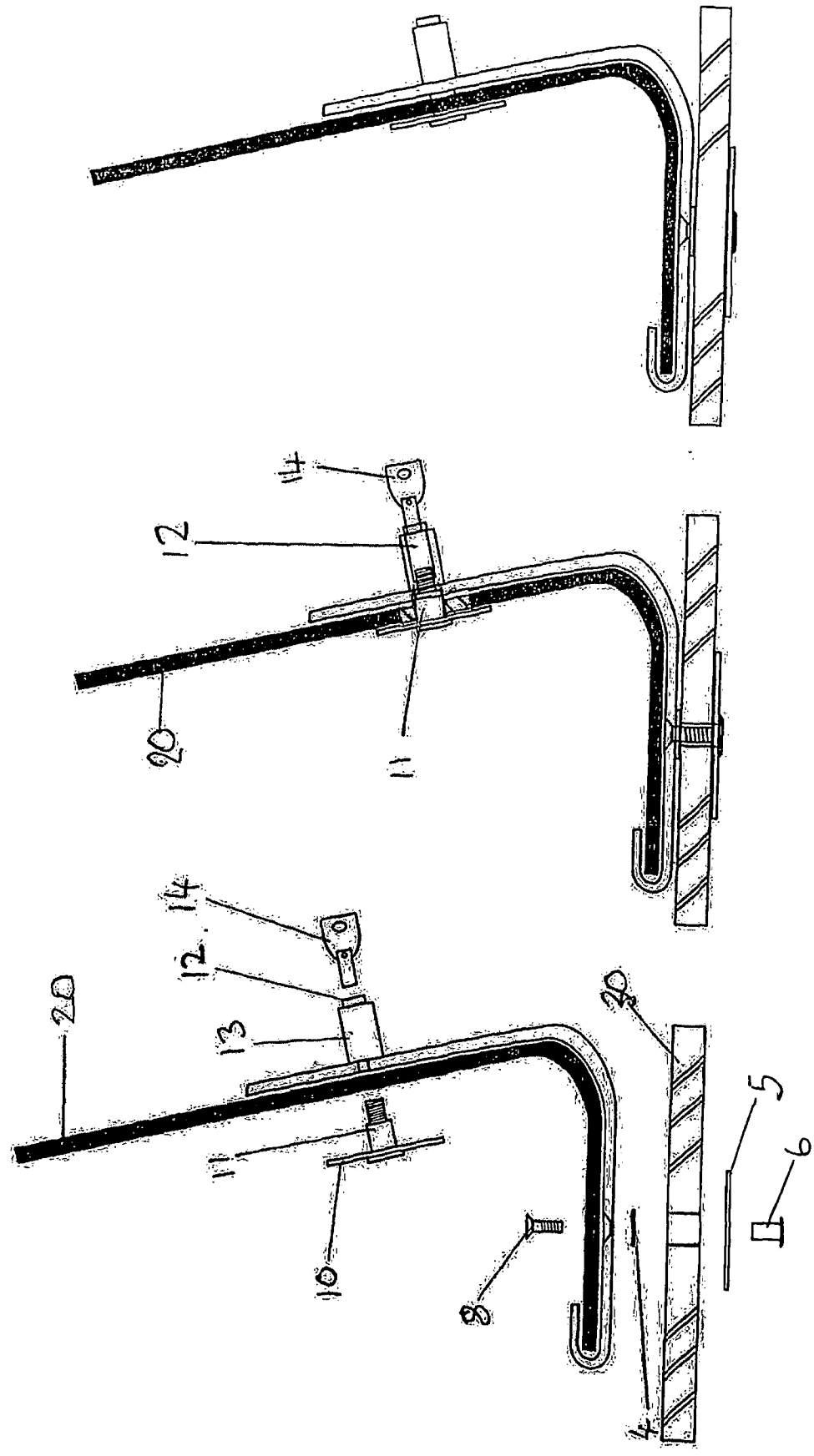

FIG 3.

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2011/000683

A. CLASSIFICATION OF SUBJECT MATTER
INV. E05B73/00 F16M11/00 G06F1/16
ADD.

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)
E05B G06F F16M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, 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	GB 2 461 945 A (ROGERS RICHARD [GB]) 27 January 2010 (2010-01-27) the whole document	1
A	AU 2008 101 248 A4 (LOCK IT DOWN SERVICES PTY LTD) 19 February 2009 (2009-02-19) the whole document	1
A	WO 2004/001167 A1 (PC LOCS PTY LTD [AU]; SYMONS PAUL JAMES [AU]; WRIGHT CRAIG ANDREW [AU]) 31 December 2003 (2003-12-31) the whole document	1
A	JP 2005 236240 A (LINTEC CORP) 2 September 2005 (2005-09-02) the whole document	1

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
23 September 2011	30/09/2011

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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2006/291156 A1 (ALLEN PETER [US]) 28 December 2006 (2006-12-28) the whole document -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2011/000683

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2461945 A	27-01-2010	NONE	
AU 2008101248 A4	19-02-2009	NONE	
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