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(54) **Secure bulk transfer unit**

(57) The invention provides a bulk transfer unit configured to enable a secure transfer of valuables from a first non-secure area to a second secure area. The unit includes a first door providing access to the unit from the first area and a second door providing access to the unit from the second area. The doors are separated from one another by a transfer area defined within the unit. The unit includes a locking mechanism providing for manual interlocking of the two doors such that access to the transfer area is restricted at any one time to access from one of the two areas. The locking mechanism includes a rotatable locking bar, which is rotatable between a first po-

sition and a second position. A handle is located on the secure area side of the second door and coupled to the locking bar and the handle is provided to enable a rotation of the locking bar. The locking mechanism further includes a first locking means for locking the first door and a second locking means for locking the second door. The rotatable bar is coupled with the first and second locking means, and in the first position the first door is locked and the second door is unlocked, and in the second position the second door is locked and the first door is unlocked.

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Description

Field of the Invention

[0001] The present invention relates to bulk transfer units and in particular to an improved bulk transfer unit that utilises a manual locking mechanism to ensure secure transfer of valuables through the unit.

Background Of The Invention

[0002] Bulk transfer units are well known in the art. They are designed to allow the safe and easy transfer of cash and other valuables between secure and non-secure areas without the need to open the security door that provides the normal means of access to the secure area. They are normally installed in banks and other financial institutions where there is a need to transfer bulk cash to the teller who is located behind a security screen. Other known areas of installation include retail outlets where the takings for the day are centrally stored and access is limited.

[0003] The known units allow for installation through internal doors and counters. By providing a unit which has two doors on opposite sides of the unit and then controlling how the doors open such that the two doors cannot be opened simultaneously it is possible to use the unit as a safe conduit to the secure area. Known arrangements include those provided by Kilby-Tann Limited where the two doors are bottom hung such that when an individual door is lowered it provides a convenient shelf to assist in the presenting and removal of heavy containers to and from the unit. Such a unit is fabricated from 3mm mild steel plate with the doors manufactured using 1.5 mm steel with a bullet resistant armour core. The unit is then located in the wall area where the conduit is desired and fixed in place using flanges. A difficulty with such a bottom hinged arrangement is the complexity of locking arrangement that is required for operation.

[0004] Another example of a bulk transfer unit is a rotary system provided by J.E. Johnson & Sons (Engineers) Limited. This unit is modelled on a rotary principle where a load is located within the hatch and then the hatch is rotated from inside the security zone. The rotation is effected using a power switch. A difficulty with a rotary arrangement is that the dimensions of the rotary drum are not always suited to the dimensions of the material which normally requires transfer to and from the secure area.

[0005] Further known systems include fully electronic locking systems which require complex circuitry and locking arrangements. There is therefore a need to provide a simplified arrangement which can be easily fabricated and yet provides the necessary degree of security for units of this purpose.

Summary

[0006] These and other needs are addressed by a bulk transfer unit in accordance with the present invention. In accordance with a first embodiment, a bulk transfer unit is provided, the unit being configured to enable a secure transfer of valuables from a first non-secure area to a second secure area, and wherein the unit includes a first door providing access to the unit from the first area and a second door providing access to the unit from the second area, the doors being separated from one another by a transfer area defined within the unit, the unit including a locking mechanism providing for manual interlocking of the two doors such that access to the transfer area is restricted at any one time to access from one of the two areas, and wherein the locking mechanism includes a rotatable locking bar, the bar being rotatable between a first position and a second position,

a handle located on the secure area side of the second door and coupled to the locking bar, the handle being provided to enable a rotation of the locking bar,

a first locking means for locking the first door and a second locking means for locking the second door, the rotatable bar being coupled with the first and second locking means, and wherein in the first position the first door is locked and the second door is unlocked and in the second position the second door is locked and the first door is unlocked.

[0007] The first locking means is desirably provided by a bolt and slot inter-engagement; the bolt being coupled to the locking bar and the slot being provided on the transfer area side of the first door, the bolt being receivable within the slot so as to effect a locking of the first door. As the first locking means is located substantially within the transfer area it is not normally accessible by persons on the non-secure side of the unit.

[0008] The second locking means is desirably provided by the handle, a rotation of the handle bringing the handle into abutment with the secure area side of the second door so as to prevent an opening of the second door. Although the handle is freely accessible to persons in the secure area, these person are normally trusted so as to not tamper with or damage the locking mechanism.

[0009] The locking means are desirably biased such that the locking mechanism is biased towards adopting the first locking position. Such biasing is typically achieved by weighting the bolt such that it tends normally to drop into and be received within the slot. As such, access to the transfer area from the non-secure area is normally restricted. On adoption of the second locking position, the bolt moves out of the slot and into an area in an upper region of the unit where it does not obstruct access to the transfer area.

[0010] The handle and bolt are typically 90 degrees out of phase with one another.

[0011] The unit desirably comprises a skirt of a solid piece of material that extends substantially horizontally from an inner surface of the second door into the transfer

area.

[0012] The transfer area of the unit desirably comprises an upper region between the first and second doors and the top of the unit, and the locking bar is located in said upper region of the unit and extends from the first door to the second door.

[0013] The locking bar is arranged so that it projects beyond the second door such that the handle provided on the end thereof is accessible from the secure area.

[0014] The unit desirably comprises a socket on an inner surface of the unit at the non-secure end. Preferably, the bar is received within and is rotatable within said socket.

[0015] The doors are typically fabricated of steel plate or some other suitable material of sufficient thickness to withstand attack by persons of unscrupulous background.

[0016] The unit may be installed within a wall, counter or similar area which separates a secure area from a non-secure area. The unit may be combined with a dip tray to enable a transfer of non-bulky items. A combined dip-tray and bulk transfer unit, when installed, may be located below a see through screen through which visual communication between the two areas may be effected.

[0017] These and other features will be better understood with reference to the exemplary embodiments which follow.

Brief Description Of The Drawings

[0018] The present invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a bulk transfer unit in accordance with the present invention with internal components visible.

Figure 2 is a view similar to that of Figure 1 in another locking position.

Figure 3 is a side view of a combined unit/dip tray in accordance with an embodiment of the invention.

Figure 4 is a plan view of the combined unit of Figure 3.

Figure 5 is a view from a secure area of the unit of Figure 3.

Figure 6 is a view from a non-secure area of the unit of Figure 3.

Detailed Description Of The Drawings

[0019] The invention will now be described with reference to Figures 1 to 6 of the accompanying drawings.

[0020] As shown in Figure 1, a bulk transfer unit 100 in accordance with the present invention provides for a secure transfer of valuables (not shown) from a first non-secure area 105 to a second secure area 110. To enable this transfer, the unit includes a first door 115 providing access to a transfer area 120 within the unit from the first area and a second door 125 providing access to the unit

from the second area 110. The unit including a locking mechanism 130 providing for manual interlocking of the two doors such that access to the transfer area 120 is restricted at any one time to access from one of the two areas- in Figure 1 access is possible through the first door while the second door is maintained locked.

[0021] The locking mechanism desirably includes a rotatable locking bar 135, the bar being rotatable between a first position and a second position, actuation of the bar being effected using a handle 140 located on the secure area side of the second door and coupled to the locking bar. The handle is provided to enable a manual rotation of the locking bar. A first locking means, in this exemplary embodiment shown as a bolt 145 and slot 150, is provided for locking the first door. The slot 150 is provided on the transfer area side of the first door, i.e. the inside of the unit, the bolt being receivable within the slot so as to effect a locking of the first door. As the first locking means is located substantially within the transfer area it is not normally accessible by persons on the non-secure side of the unit. The locking means are desirably biased such that the locking mechanism is biased towards adopting the first locking position. Such biasing is typically achieved by weighting the bolt 145 such that it tends normally to drop into and be received within the slot 150. As such, access to the transfer area 120 from the non-secure area 105 is normally restricted. On adoption of the second locking position, the bolt 145 moves out of the slot 150 and into an area 155 in an upper region 160 of the unit where it does not obstruct access to the transfer area.

[0022] A second locking means, in this exemplary embodiment the handle 140 itself, is provided for locking the second door. The bar 135 is coupled to both the bolt 145 and the handle 140. A rotation of the handle brings the handle into abutment with the secure area side of the second door so as to prevent an opening of the second door. Although the handle is freely accessible to persons in the secure area, these persons are normally trusted not to tamper with or damage the locking mechanism. This abutment is typically achieved by providing the handle on an end 135a of the bar 135. The handle extends from the end 135a of the bar 135 substantially at right angles thereto. By enabling the bar to project into the secure area (by providing an aperture in the unit through which the bar may pass) by a sufficient distance to enable the handle to rotate into and out of engagement with the door 125, locking of the door 125 is achieved. It will be appreciated that this distance is such that an inner surface 140a slides against an outer surface 125a of the door, the abutment of the two surfaces preventing the door 125 from opening. When the handle is rotated away from the door, the door is then free to be opened.

[0023] To prevent the handle accidentally dropping down when the door 125 is opened a skirt 165 may be provided. The skirt is a solid piece of material that extends horizontally from an inner surface 125b of the door into the transfer area 120. A rotation of the door outwardly so as to open the door, causes the skirt to also extend into

the secure area, and as the skirt is desirably provided at an upper region of the door, this extension prevents the handle from falling down into the region between the open door and the transfer area.

[0024] In an alternative arrangement the handle and bar may further comprise a lock/release means to hold the handle in the unlocked position away from the door, for example a catch or other suitable means.

[0025] The locking bar is desirably located in the upper region 160 of the unit and extends from the first door to the second door. As mentioned above, it projects beyond the second door such that the handle provided on the end is accessible from the secure area. On the other end of the bar, it is desirably received within a socket 170 provided on an inner surface of the unit, the bar being rotatable within the socket.

[0026] The handle and bolt are typically 90 degrees out of phase with one another. In this way the handle only has to be moved through 90 degrees to move it out of engagement with the door which it locks while at the same time bringing the bolt into engagement with the slot thereby locking the other door.

[0027] The handle 140 and/or the bolt 145 may be integrally formed with the bar. The provision of a handle and/or bolt integrally formed with the rotatable bar has the advantage that it is a very robust and strong arrangement. The bar, handle and bolt may further comprise reinforcing means for increased security.

[0028] The doors are typically fabricated of steel plate or some other suitable material of sufficient thickness to withstand attack by persons of unscrupulous background. Such materials are well known to the person skilled in the art and will not be described here.

[0029] The unit may be installed within a wall, counter or similar area which separates a secure area from a non-secure area. Heretofore the invention has been described with reference to a stand-alone unit. Figure 3 shows how the unit 100 may be combined with a dip tray 300 to enable a transfer of non-bulky items between a secure and non-secure area without requiring use of the bulk transfer unit of the invention. A combined dip-tray and bulk transfer unit 350, when installed, may be located below a see through screen 305 through which visual communication between the two areas 105, 110 may be effected. As shown in the plan view of Figure 4, the dip tray may be offset to one side of the combined unit. Such non-centring of the dip tray on the main axis of the unit and overlying the rod 135 is advantageous in that it provides a writing or working area 310, 315 on either side of the screen 305 which heretofore has not been provided.

[0030] Figures 5 and 6 show views of such a combined unit from the perspective of the secure and non-secure side respectively. As shown in Figure 5 the handle 140 is clearly visible whereas in Figure 6 none of the locking mechanism is visible. As such the security of the unit is enhanced- as it cannot be seen it is harder to attack.

[0031] The bulk transfer of the invention provides for

excellent security for the transfer of items. The system is a fully manual system which is self contained and completely independently operated. In particular it is not dependent on an external power source for operation. Furthermore the system has the advantage that it does not include electronic components which may require maintenance or maybe subject to interference or failure. In addition, the system is easy to operate and maintain. The maintenance costs are low.

[0032] What has been described herein is an improved bulk transfer unit that incorporates a fully manual locking mechanism so as to control access between secure and non-secure areas. While advantageous embodiments have been described it will be appreciated that certain integers and components are used to illustrate exemplary embodiments and it is not intended to limit the invention in any way except as may be deemed necessary in the light of the appended claims. Furthermore where the invention is described with reference to specific figures it will be appreciated that components or features of one figure can be freely interchanged with those of other figures without departing from the scope of the invention.

[0033] The words comprises/comprising when used in this specification are to specify the presence of stated features, integers, steps or components but does not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof.

30 Claims

1. A bulk transfer unit (100) for a secure transfer of valuables from a first non-secure area (105) to a second secure area (110), the unit including a first door (115) providing access to a transfer area (120) within the unit from the first area and a second door (125) providing access to the transfer area from the second area, the unit further including a locking mechanism (130) providing for manual interlocking of the two doors such that access to the transfer area is restricted at any one time to access from one of the two areas, and wherein the locking mechanism includes a rotatable locking bar (135), the bar being rotatable between a first position and a second position, a handle (140) located on the secure area side of the second door and coupled to the locking bar, the handle being provided to enable a rotation of the locking bar, a first locking means (145, 150) for locking the first door and a second locking means (140) for locking the second door, the rotatable bar (135) effecting an actuation of the first and second locking means, and wherein in the first position the first door (115) is locked and the second door is unlocked and in the second position the second door (125) is locked and the first door (115) is unlocked.

2. The unit as claimed in claim 1 wherein the first locking

means is provided by a bolt (145) and slot (150) inter-engagement; the bolt being coupled to the locking bar (135) and the slot (150) being provided on the transfer area side of the first door, the bolt being receivable within the slot so as to effect a locking of the first door. 5

3. The unit as claimed in claim 1 or 2 wherein the second locking means is provided by the handle (140), a rotation of the handle bringing the handle into abutment with the secure area side of the second door (125) so as to prevent an opening of the second door. 10
4. The unit as claimed in claim 2 wherein the locking means are biased such that the locking mechanism is biased towards adopting the first locking position, such biasing being achieved by weighting the bolt (145) such that it tends normally to drop into and be received within the slot (150). 15
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5. The unit as claimed in any preceding claim wherein the handle (140) of the second locking means and the bolt (145) of the first locking means are arranged substantially at 90° out of phase with one another. 25
6. The unit as claimed in any preceding claim further comprising a skirt (165) wherein the skirt is a solid piece of material that extends substantially horizontally from an inner surface (125b) of the second door into the transfer area (120). 30
7. The unit as claimed in any preceding claim wherein the transfer area (120) of the unit comprises an upper region (160) between the first and second doors and the top of the unit, and the locking bar (135) is located in said upper region (160) of the unit and extends from the first door to the second door. 35
8. The unit as claimed in claim 7 wherein the locking bar is arranged so that it projects beyond the second door such that the handle (140) provided on the end thereof is accessible from the secure area. 40
9. The unit as claimed in any preceding claim comprising a socket (170) on an inner surface of the unit at the non-secure end. 45
10. The unit as claimed in any of claim 9 wherein the bar is received within and is rotatable within said socket. 50

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