

A MORTICE LOCK ASSEMBLY WITH A DEADLATCHING FEATURE

TECHNICAL FIELD

[0001] This invention relates to a mortice lock assembly for use with a door including a housing, and a latchbolt movable relative to the housing between an extended position and a retracted position. More specifically in one embodiment the mortice lock assembly is of the kind that includes deadlatching means which inhibits unauthorised movement of the latchbolt from the extended position. In another embodiment the lock assembly is of the kind that includes an enhancement to strengthen the housing.

BACKGROUND OF INVENTION

[0002] A mortice lock assembly according to the foregoing will generally include an actuator in the form of an inner hub and an outer hub that is operable by a handle, or turn knob located on the inner side and outer side of the door respectively. Each hub is capable of interacting with the latchbolt by rotating about an actuation axis so as to retract the latchbolt from the extended position. A cylinder lock assembly and or turnsnib can be included to control the operation of the actuator, and/or directly interact with the latchbolt. One cylinder lock assembly will generally be installed on the outside of the door, while on the inside another cylinder lock assembly or turnsnib may be installed depending upon the desired level of security required for the door.

[0003] The latchbolt of the foregoing kind may be in the form of a latchbolt assembly which has a bevelled head, the latchbolt assembly being spring biased towards the extended position. The bevelled head allows it to slide over a strike surface to move the latchbolt assembly towards a retracted position when the door is being closed. This provides a functional advantage over a deadbolt however there can be a trade off with security. When the door is hinged to open inwardly of the doorway, the bevelled face of the latchbolt will face outwardly. If the bevelled face can be accessed while the door is closed, such as between the door jamb and the edge of the door, it can be manipulated by end pressure applied to the head by a rigid card to move the latchbolt assembly to the retracted position. This unauthorised manipulation is generally undesirable.

[0004] The level of security of a latchbolt assembly can be enhanced by incorporating a deadlatching feature. A deadlatching feature can inhibit unauthorised manipulation of the latchbolt assembly from the extended position. Previously the deadlatching feature has been manually activated when the door is closed. The manually activated deadlatching is sometimes referred to as a nightlatch.

[0005] More recently some mortice lock assemblies have included a deadlatching feature, which automatically activates when the door is in a closed position. It is generally desirable that the deadlatching feature deactivate relatively easily when the cylinder lock assembly or turnsnib is used to retract the latchbolt, or when the handle or turn knob is free to retract the latchbolt. The latchbolt can be free to move relative to the housing slightly before the deadlatching feature is engaged. The applicant has appreciated that the deadlatching feature does not always deactivate easily. Instead it sometimes jams in an activated condition preventing the authorised retracting of the bolt. Furthermore the free movement of the latchbolt can make the deadlatching feature susceptible to manipulation to permit unauthorised retraction of the latchbolt. It is therefore desirable to provide a deadlatching feature that provides a useful alternative to those used in existing mortice lock assemblies.

[0006] The mortice lock assembly housing is another aspect that can contribute to the level of security. The housing has generally been formed as a die casting, often from zinc alloy. Die casting has the advantage of allowing for features to be formed in the housing, such as guide rails and locating shafts, for interaction with other internal elements of the lock assembly. This can assist with assembly of the mortice lock. There is a perception that zinc alloys cast housings are not as resistant to tampering by a drill as a stainless steel housing. A mortice lock assembly with a stainless steel housing will have a higher security rating than a lock assembly with a zinc alloy cast housing. However it is difficult to form the stainless steel housing with the same features that can be formed during a casting.

[0007] The mortice lock assembly the subject of the invention is herein described and defined with reference to its in use orientation when installed in a door, and terms such as inner and outer should be construed in light of that orientation with reference to the inner and outer side of the door. However it should be appreciated that other orientations are equally possible and that consequential changes in terms such as

these may be required in light of the other orientations for a proper understanding of the invention.

[0008] A reference herein to a patent document or other matter which is given as prior art is not to be taken as an admission that that document or matter was, in Australia, known or that the information it contains was part of the common general knowledge as at the priority date of any of the claims.

SUMMARY OF INVENTION

[0009] According to one aspect of this invention there is provided a mortice lock assembly for use with a door including a housing, a latchbolt movable relative to the housing between an extended position and a retracted position, an auxiliary bolt movable relative to the housing between an extended position and a retracted position, deadlatching means that when in an active condition inhibits movement of the latchbolt from the extended position while the auxiliary bolt is in the retracted position, the deadlatching means including a detent mounted on the latchbolt that adopts a blocked position when the deadlatching means is in the active condition and adopts a unblocked position when the deadlatching means adopts the inactive condition, the deadlatching means also including a release means mounted on the latchbolt being operable to adjust the position of the detent from the blocked position towards the unblocked position prior to movement of the latchbolt from the extended position.

[0010] The mortice lock assembly preferably includes a stop that the detent abuts so as to prevent movement of the latchbolt from the extended position when the detent is in the blocked position. The stop maybe located at any suitable position within the assembly and one option is to have the stop is fixed relative to the housing.

[0011] The mortice lock assembly may include detent biasing means for biasing the detent towards the blocked position. The detent and auxiliary bolt may each have complimenting surfaces that slide over each other when the auxiliary bolt moves between the retracted position and the extended position. It is preferred that at least one of the complimenting surfaces includes a ramp portion so as to cause movement of the detent in a direction normal to movement of the auxiliary bolt while moving between the retracted position and the extended position.

[0012] It is preferred that the latchbolt includes a head which projects out of the housing when the latchbolt is in the extended position, and a body that is housed within the housing. It is preferred that the detent is movable with the body when the latchbolt moves between the extended position and the retracted position, and the detent is movable relative to the body when adjusting between the blocked position and the unblocked position. It is preferred that the release means is formed separately from the detent and includes a movable member that is movable relative to the body and interacts with the detent so that movement of the movable member between a first position a second position adjusts the detent between the blocked position and the unblocked position. It is further preferred that the movable member is movable with the body when the latchbolt moves between the extended position and the retracted position, and the movable member is movable relative to the body when adjusting between the first position and the second position. The arrangement of having the detent and movable member mounted on the body of the bolt promotes modularisation of the components of the mortice lock which facilitates ease of assembly.

[0013] The movable member may take any suitable form and in one form it is a shuttle which moves linearly between the first position and the second position in a direction substantially aligned with a direction of movement of the latch bolt. The mortice lock assembly preferably includes a shuttle biasing means for biasing the shuttle towards the first position which corresponds to the detent being in the blocked position. It is preferred that the movable member interacts with the detent by way of complimentary surfaces so that movement of the movable member between the first position and the second position is substantially normal to movement of the detent between the blocked position and the unblocked position. The complimentary surfaces may take any form and one optional form includes a ramp surface formed on the detent and a ramp surface formed on the movable member. It is preferred that the detent is mounted on the body. It is further preferred that the movable member is mounted on the body.

[0014] The mortice lock assembly preferably includes an actuator that is operable to move the latchbolt from the extended position to the retracted position, the actuator may also operates the release means. The mortice lock assembly preferably includes a lock mechanism that when in an active condition renders the actuator inoperable.

The lock mechanism may take any form and in one preferred form the lock mechanism is configured for interaction with a cylinder lock when mounted to the mortice lock housing and having a cylinder cam, the lock mechanism being configured so that rotation of the cylinder cam an axis adjusts the condition of the lock mechanism, while the release means is configured such that rotation of the cylinder cam adjusts the release means. The lock mechanism may include a pawl that engages the actuator to prevent operation of the actuator when the lock mechanism is in the active condition. It is preferred that the cylinder cam is rotatable about the axis in one direction to adjust the condition of the lock mechanism, and rotated in an opposing direction to operate the release means. It is further preferred that rotation of the cam in said opposing direction also moves the latchbolt from the extended position towards the retracted position.

[0015] The latchbolt, deadlatching means and the release means preferably forms a subassembly, the housing having a slot to receive the subassembly for guiding its movement relative to the housing.

[0016] According to another aspect of this invention there is provided a mortice lock assembly for use with a door including, a cast housing, a latchbolt including a body located within the housing and a head that projects out of the housing when the latchbolt is in an extended position and substantially withdraws within the housing when the latchbolt is in a retracted position, the housing including a base and cover fastened to the base, the base and cover each having an outer surface with a rebated zone formed thereon, an inner plate and outer plate both formed from stainless steel fastened to the base and cover respectively in the rebated zone. This arrangement of the stainless steel plates enhances the ability of the mortice lock to resist attack by drilling through the side of the housing.

[0017] It is preferred that each of the inner plate and outer plate have a thickness that is no greater than a depth of each rebated zone. This configuration of the rebated zones facilitates the ability of the housing retain a desired width. It is further preferred that each rebated zone occupies no less than 30% of each outer surface of the base and cover.

[0018] The mortice lock assembly preferably includes a base opening and a cover opening in the base and cover respectively, the base opening and the cover opening each associated with the body of the latchbolt for guiding the latchbolt between the extended position and the retracted position. This enhances the ability of the housing to accommodate the elements of the mortice lock without increasing the width. It is preferred that the inner plate and outer plate are positioned so as to overlay the cover opening and base opening respectively. It is further preferred that the latchbolt engages the inner plate and or outer plate when moving between the extended position and the retracted position. It is further preferred that a component of the latchbolt associated with the body engages the inner plate and or outer plate. It is preferred that said component is formed of stainless steel. It is further preferred that the base and cover is cast from a metal that less hard than stainless steel. The cast metal may take any form and one optional form of metal is a zinc alloy.

[0019] The mortice lock assembly may include a cover groove located in outer surface of the cover and an base groove locate in the outer surface of the base, each groove configured to receive a cylinder pin for securing a cylinder lock assembly to mortice lock assembly. It is preferred that the inner plate and outer plate overlay the cover groove and the base groove respectively. It is further preferred to include a front plate fastened to the base including a pin opening to receive each cylinder pin there through. This preferred arrangement enhances the securing of the pins to the housing while minimising the thickness of the housing.

[0020] The front plate may include a head opening to receive the head of the latchbolt, the inner plate and outer plate each having a leading edge zone that locates in the head opening. It is further preferred that both the inner plate and out plate include at least one locating slot, each slot for locating on at least one flange associated with the housing. Preferably each flange extends through the housing beyond the outer surface of the base and the cover into each rebated zone. This preferred arrangement enhances securing the inner plate and outer plate to the housing.

[0021] According to an alternate preferred embodiment the latchbolt includes a head which projects out of the housing when the latchbolt is in the extended position, and a body that is housed within the housing, with the deadlatching means being

mounted on the body. It is preferred that the deadlatching means includes a detent biasing means for biasing the detent means towards the blocked position, the latchbolt having a latchbolt biasing means for biasing the latchbolt towards the extended position, whereby the latchbolt biasing means applies a greater force than the detent biasing means. It is preferred that the detent biasing means acts between the body of the latchbolt and the detent means and applies its force in a direction that is substantially perpendicular to a direction in which the latchbolt biasing means is applied. It is preferred that the release means includes a release portion and the detent means includes a detent portion, the release portion being formed with the detent portion to move therewith. It is further preferred that the detent portion and the release portion move in a direction normal to movement of the latchbolt relative to the housing. It is further preferred that the housing is formed with a slot that interacts with the detent means, the slot including a stop formation that the detent means abuts so as to prevent movement of the latchbolt from the extended position when the detent is in the blocked position. It is still further preferred that the slot includes an aperture formed a wall of the housing with the detent means including a leg portion that locates in the aperture.

[0022] PARAGRAPH INTENTIONALLY LEFT BLANK.

[0023] The release means preferably includes a shoulder and auxiliary bolt includes a ramp surfaces that slide over the shoulder as the auxiliary bolt moves between the retracted position and the extended position so as to adjust the detent means from the blocked position to the unblocked position.

[0024] The mortice lock assembly preferably includes an actuator that is operable to move the latchbolt from the extended position to the retracted position, the actuator also operates the release means. It is preferred that the actuator includes a rotatable arm and the release means includes first surface, whereby rotation of the rotatable arm causes the rotatable member to slide over the first surface to operate the release means. It is further preferred that the mortice lock assembly includes a lock mechanism that when in an active condition renders the actuator inoperable, the lock mechanism including a cylinder cam that is rotated to adjust the condition of the lock mechanism, the cylinder cam is also rotated to operate the release means. It is further preferred that the release means includes a second surface, whereby rotation of the cylinder cam causes the cylinder cam to slide over the second surface to operate the release means. The lock mechanism preferably includes a slide detent that interacts with the cylinder cam and at least one pawl that interacts with the slide detent and interacts with the actuator to prevent operation of the actuator when the lock mechanism is in the active condition. It is preferred that the cylinder cam is rotatable about the axis in one direction to adjust the condition of the lock mechanism, and rotatable in an opposing direction to operate the release means. It is further preferred that rotation of the cam in said opposing direction also moves the latchbolt from the extended position towards the retracted position.

[0025] It is preferred that the housing includes a front wall and a rear wall spaced from the front wall, the spacing being less than 50mm.

[0026] It will be convenient to hereinafter describe preferred embodiments of the invention in greater detail with reference to the attached illustrations. The drawings, and the following detailed description are merely illustrative of how the invention might be put into effect. The specific form and arrangement of the various features as shown is not to be understood as limiting on the invention.

BRIEF DESCRIPTION OF DRAWINGS

[0027] Figure 1 is an isometric partially exploded illustration of a lockset incorporating a preferred embodiment of the mortice lock assembly, according to the invention, prior to installation in a door. Figure 2 is an isometric view of the mortice

lock assembly from Figure 1 with a cover plate removed from the lock housing, and an outer cylinder lock assembly fixed to the mortice lock housing.

[0029] Figure 3 is an isometric view of mortice lock assembly from Figure 2 with the movable member of the release means shown in ghost line.

[0030] Figure 4 is a front elevation view of the mortice lock assembly from Figure 2 with the auxiliary bolt in a retracted position, the detent in a blocking position, and the cam rotated to engage the movable member of the release means.

[0031] Figure 5 is a front elevation view of the mortice lock assembly from Figure 4 with the cam further rotated to move the movable member to a second position, moving the detent to an unblocking position.

[0032] Figure 6 is a front elevation view of the mortice lock assembly from Figure 5 with the cam further rotated to move the latchbolt to the retracted position.

[0033] Figure 7 is a front elevation view of the mortice lock assembly from Figure 2 with the auxiliary bolt in a retracted position and the detent in the blocking position.

[0034] Figure 8 is a front elevation view of the mortice lock assembly from Figure 7 with the inner hub rotated to engage and move the movable member to the second position, to move the detent to the unblocking position.

[0035] Figure 9 is a front elevation view of the mortice lock assembly from Figure 8 with the movable member shown in ghost line.

[0036] Figure 10 is a front elevation view of the mortice lock assembly from Figure 8 with the inner hub further rotated to move the latchbolt to the retracted position.

[0037] Figure 12 is an isometric view of the mortice lock assembly from Figure 1.

[0038] Figure 13 is a partial exploded view of the mortice lock assembly from Figure 12.

[0039] Figure 14 is a partially assembled view of the mortice lock assembly from Figure 13 with the latchbolt assembly in the extended position.

[0040] Figure 15 is a partially assembled view of the mortice lock assembly from Figure 17 with the latchbolt assembly in a retracted position.

[0041] Figure 16 is an isometric view of short backset mortice lock assembly with a cover forming part of a housing removed, and an outer cylinder lock assembly fixed to a base of the housing.

[0042] Figure 17 is a rear isometric view of the mortice lock assembly from Figure 16 with the cover attached to the base of the housing, and an inner cylinder lock assembly fixed to the cover.

[0043] Figure 18 is a partially exploded view of components of the mortice lock assembly illustrated in Figure 16 including deadlatching means, a latchbolt assembly, an auxiliary bolt assembly and face plate.

[0044] Figure 19 is a rear view of the components illustrates in Figure 18.

[0045] Figure 20 is a front elevation view of the mortice lock assembly from Figure 16 with a body of the latchbolt assembly, and body of the auxiliary bolt assembly shown in ghost line, with the deadlatching means in the active condition.

[0046] Figure 21 is a front elevation view of the mortice lock assembly from Figure 20 with an arm of the actuator rotated and the deadlatching means in an inactive condition.

[0047] Figure 22 is a rear elevation view of the mortice lock assembly from Figure 21.

[0048] Figure 23 is the front elevation view of the mortice lock assembly from Figure 21 with the latchbolt in the retracted position.

[0049] Figure 24 is a rear elevation view of the mortice lock assembly from Figure 23.

[0050] Figure 25 is a front elevation view of the mortice lock assembly from Figure 16 with the deadlatching means in the active condition, and cylinder lock cam rotated.

[0051] Figure 26 is a front elevation view of the mortice lock assembly from Figure 25 with the cylinder lock cam further rotated, and the deadlatching means in the inactive condition.

[0052] Figure 27 is a front elevation view of the mortice lock assembly from Figure 26 with the latchbolt assembly in a retracted position.

DETAILED DESCRIPTION OF INVENTION

[0053] Referring now to Figure 1 which illustrates an example of a lock set 1 including in summary outer door furniture 2, inner door furniture 3, a mortice lock assembly 4, an outer cylinder lock assembly 5 and an inner cylinder lock assembly 6. The mortice lock assembly 4 includes a housing 7 which in use is located in a mortice cavity 8 formed in a side edge of a door 9 only a portion of which is shown. The housing 7 includes a front wall 10 which is attached to the side edge of the door 9, generally by screw fasteners (not shown). The housing 7 includes a base 83 and a cover 84 attached to the base by screws 85. An inner plate 86 and an outer plate 87 (see Figure 13) overlie and are attached to the cover 84 and base 83 respectively. A face plate 80 is also turn attached to the housing 7 by screws 81.

[0054] The inner door furniture 3 illustrated includes an inner escutcheon 11, an inner handle 12 and an inner spindle 13. The outer door furniture 2 includes an outer escutcheon 14, an outer handle 15 and an outer spindle 16. The inner handle 12 and outer handle 15 are each rotatable about an actuator axis XX, so as to rotate the inner spindle 13 and outer spindle 16 independently of each other. The inner spindle 13 and outer spindle 16 interact with a spindle recess formed in a respective hub, with only the spindle recess 35 of an inner hub is usable in Figure 1. These features of the mortice lock assembly 4 will be described in greater detail with reference to later illustrations.

[0055] The inner handle 12 and/or outer handle 15 are merely one preferred form of a hand engageable member and may be replaced by a turn knob or the like. The invention is not intended to be limited to the inner handle 12 or outer handle 15 as illustrated. Furthermore, whilst Figure 1 illustrates the inner cylinder lock assembly 6 and the outer cylinder lock assembly 5, the inner lock assembly 6 may be substituted by an inner turn snib.

[0056] The cylinder lock assemblies 5, 6 illustrated in Figure 1 each include a casing 17, and a barrel 18 (only barrel 18 of inner cylinder lock 6 assembly is visible in Figure 1) that is rotatable within the casing 17 by inserting an appropriate key (not shown). A cam 19 (only cam 19 of outer cylinder lock 5 is visible in Figure 1) is attached to a rear the barrel 18 so as to rotate with the barrel 18. The cam 19 interacts with features of the mortice lock assembly 4 in a manner that will be described in greater detail with reference to latter illustrations.

[0057] The key adjusts the position of pin tumblers (not shown). The manner in which this form of tumbler functions ought to be familiar to those skilled in the art. It will be appreciated that the form of cylinder lock assembly 5, 6 illustrated may vary from that illustrated, and the invention is not to be limited to a pin tumbler cylinder lock assembly 5, 6 as hereinbefore described. Instead, for example, the pin tumblers may be replaced with a discs or wafers.

[0058] Referring now to Figure 2, which illustrates a preferred embodiment of the mortice lock assembly 4 incorporating the invention with the cover 83 removed to reveal the internal elements. Whilst Figure 2 illustrates what is referred to as a standard back set mortice lock assembly 4, it is to be appreciated that the invention may also be applicable to short back set mortice lock assemblies and long back set mortice lock assemblies. Whilst a person skilled in the art ought to appreciate what is intended by those references, in summary, it is a reference to the distance between the front wall 10 of the housing 7 and a rear wall 20 thereof. A standard backset mortice lock assembly 4 may have a distance of around 80mm from the front wall 10 to the rear wall 20.

[0059] Figure 2 illustrates a latchbolt assembly 21 having a bevelled head 22 and frame 23. The shape of the head 22 may vary from the bevel as illustrated, so for example the head 22 may instead have a bull nose shape. The latchbolt assembly 21 is illustrated in an extended position whereby the head 22 projects out through the front wall 10 of the housing 7. A latchbolt biasing means, illustrated in a preferred form of a compression spring 24, acts between the latchbolt assembly 21 and an abutment 25. The abutment 25 is fixed in position relative to the housing 7, or formed with the housing 7, so that the compression spring 24 biases the latchbolt assembly 22 towards the extended position.

[0060] Figure 2 also illustrates an axillary bolt 26 having a wedged shaped head 27 extending out through the front wall 10 of the housing 7. The axillary bolt 26 includes a body 28 which is located within the housing 7 so as to interact with a deadlatching mechanism 29 located on the frame 23 of the latchbolt assembly 21. An axillary bolt biasing means, illustrated in the preferred form of a compression spring 30, acts between the axillary bolt 26 and an abutment 31. The abutment 31 is fixed relative to or forms part of the mortice lock housing 7 so that the compression spring 30 biases the axillary bolt 26 towards the extended position as illustrated in Figure 2. Whilst the axillary bolt 26 remains in the extended position, the deadlatching mechanism 29 is retained in an inactive condition whereby the latchbolt assembly 21 is free to move from the extended position to a retracted position (see Figure 6). The function of the deadlatching mechanism 29 will be described in greater detail by reference to later illustrations.

[0061] The mortice lock assembly 4 includes an actuator 32 that is operable for moving the latchbolt 21 from the extended position illustrated in Figure 2 to a retracted position as illustrated in Figure 6. The actuator may take any form and the preferred form of actuator 32 illustrated in Figure 2 includes an inner hub 33, and an outer hub 34 (substantially obscured). Each of the inner hub 33 and outer hub 34 include a spindle recess 35 to receive a portion of each spindle 13, 16 associated with the inner handle 12 and outer handle 15 respectively. Each of the inner hub 33 and outer hub 34 are independently rotatable about the actuator axis XX (see Figure 1), by rotation the inner handle 12 or outer handle 15 respectively. Figure 2 illustrates an actuator biasing means, in its preferred form of a compression spring 36, which acts indirectly to bias each of the inner hub 33 and outer hub 34 towards the orientation illustrated on Figure 2. The actuator biasing means may take another form to that as illustrated.

[0062] The mortice lock assembly 4 illustrated in Figure 2 also includes a lock mechanism 37 which in summary includes a slide 38 acting on an inner pawl 39 and outer pawl (observed). The lock mechanism 37 functions to interact with the outer cylinder lock assembly 5 (and inner cylinder lock assembly 6 illustrated in Figure 1) to render the actuator 32 inoperable. The lock mechanism is adjustable between an active condition (not illustrated) whereby the actuator 32 is rendered inoperable, and an inactive condition (illustrated in Figure 2) whereby the actuator 32 is operable.

[0063] Figure 2 illustrates one preferred form of slide 38 which includes an abutment formation 41 at an upper end thereof. The abutment formation 41 interacts with an upper arm 40, or lower arms 42, of the cam plate 19, so that clockwise rotation of the cam 19 causes the upper arm 40 to engage the abutment 41 and cause downward sliding movement of the slide 38 in a direction parallel to the back wall 20. The configuration of the abutment formation 41 may vary from that illustrated particularly where the cam includes an arm 40 of alternate configuration to that illustrated in Figure 2.

[0064] The downward sliding movement of the slide 38 causes a lower end of the slide 38 to move towards the inner pawl 39 and the outer pawl. When the lock mechanism 37 is adjusted to an active condition, the slide 38 is moved down (not illustrated) to engage the inner and/or outer the pawls 39. The inner pawl 39 and outer pawl are mounted on a pawl mount 43 which extends in a direction that is parallel to the actuator axis XX. Rotation of either pawls causes it to engage its respective hub 33, 34, thereby preventing the hubs 33, 34 from rotating. The actuator 32 is considered to be inoperable in this condition, the actuator 32 is considered to be in an active condition when the pawls 39 are disengaged from the hubs 33, 34. It should be noted however, that the Figures show the pawls in a deactivated condition whereby the slide 38 is prevented from engaging the pawls. The invention is not limited to the specific design of the pawls 39, 40, as the slide 38 could, for example, act directly on the inner hub 33 and outer hub 34 instead.

[0065] The mortice lock assembly 4 according to the invention includes a release means 45 which is operable to adjust the position of a detent 46 of the deadlatching mechanism 29 from a block position to a unblocked position. The release means 45 may take any form and preferably includes a movable member 47 that is movable relative to the frame 23 between a first position and second position. The preferred form of movement movable member 47 is linear shuttling movement between the first position and the second position and therefore the movable member may be referred to as a shuttle 47. However the movable member 47 may adopt any suitable form of movement.

[0066] It is preferred that the shuttle 47 is biased towards the first position by a shuttle biasing means 48 as illustrated in ghost line in Figure 3. The shuttle biasing

means acts between the shuttle 47 and the frame 23 so as to urge the shuttle 47 to move towards the head 22 of the latchbolt assembly 21. The shuttle 47 may be moved to the second position by rotation of either the cam 19 or hubs 33, 34 which will be hereinafter described. It is preferred that the shuttle biasing means apply a force to the shuttle 47 that is less than the force applied by the latchbolt biasing means 24 applies to the latchbolt 21. This allows the shuttle 47 to move relative to the latchbolt 21, adjusting the position of the detent 46, before the latchbolt 21 itself moves.

[0067] Referring now to Figure 11 which illustrates the latchbolt assembly 21, deadlatching mechanism 29 and release means 45 in an exploded view. This reveals frame 23 of the latchbolt assembly 21 is formed of two parts which nest into each other when assembled to prevent relative movement in the direction of movement of the latchbolt assembly. The deadlatching mechanism 29 also nests on the frame 23 so that an arm 91 of the detent 46 locates in a groove 92 of the frame 23. Legs 93 of the detent 46 abut side walls 94 of the frame 23 so as to slide over each other as the detent 46 moves between the blocked position and the unblocked position. The deadlatching mechanism 29 includes a detent biasing means 90, illustrated in the form of a compression spring, which acts between the frame 23 and the detent 46 for urging the detent 46 to adopt the blocked position. The movement of the detent 46 under the influence of the biasing means 90 is limited by a tab 95 of the frame 23 abutting a shoulder 96 of the detent 46 when it reaches the blocked position. Whilst the movement of the shuttle 47 under the influence of the biasing means 48 is limited by a projection 97 on the back wall 98 of the frame 23 abutting the side wall 99 of the shuttle 47 once it reaches the first position.

[0068] Referring still to Figure 11 it should be noted that the head 22 of the latchbolt assembly 21 can and has been rotated relative to the frame 23 from the position shown in Figure 2. The ability of the head 22 to rotate relative to the frame enables the mortice lock to be fitted for right hand opening or left hand opening.

[0069] The manner in which the mortice lock operates, or more specifically how the latchbolt assembly 21 is retracted, will now be described. Referring firstly to Figures 4, 5 and 6 which illustrate retraction of the latchbolt assembly 21 by operation of the cylinder lock 5. Figure 4 which illustrates the latchbolt assembly 21 in an

extended position and the auxiliary bolt 26 in a retracted position, as would be expected in the case of the door 9 (see Figure 1) being in a closed position. Rotation of the cam 19 from the position illustrated in Figure 4 to the position illustrated in Figure 5 causes the shuttle 47 to move, against the urging of the shuttle biasing means 48, from the first position illustrated in Figure 4 to the second position illustrated in Figure 5. The shuttle 47 includes a ramp surface 50 (see also Figure 11) which engages a complementary ramp surface 51 (see also Figure 11) formed on the legs 93 of the detent 46. Movement of the shuttle 47 from the first position to the second position causes the ramp surfaces 50, 51 to slide over each other, withdrawing the detent 46 from the blocked position illustrated in Figure 4 to the unblocked position illustrated in Figure 5. This movement of the detent 46 is against the urging of the detent biasing means 90, and positions the detent 46 below the stop 49 so as to allow the latchbolt assembly 21 to move from the extended position.

[0070] It should be noted from Figure 5 that the latchbolt assembly 21 has still not moved from its extended position. Figure 5 illustrates the shuttle 47 abutting the frame 23 so that further rotation of the cam 19 causes direct retraction of the latchbolt assembly 21 from the extended position to the retracted position as illustrated in Figure 6. This locates the head 22 of the latchbolt assembly sufficiently within the housing 7 to allow the door 9 to be opened.

[0071] Referring now to Figures 7, 8, 9 and 10 which illustrate retraction of the latchbolt assembly 21 by operation of the actuator 23. The shuttle 47 may be moved from the first position to the second position by rotation of either the inner hub 33 or outer hub 34 (obscured in Figure 7). Figure 7 again illustrates the detent 46 in the blocked position, and the shuttle 47 in the first position. The inner hub 33 has been rotated from the position illustrated in Figure 7 to the position illustrated in Figure 8 to causes the shuttle 47 to move from the first position to the second position against the action of the shuttle biasing means 48 (see Figure 9). The ramp surface 50 on the shuttle 47 engages with the ramp surface 51 on the detent 46 to draw the detent 46 from the blocked position illustrated in Figure 7 to the unblocked position as illustrated in Figure 8. This locates the detent 46 below the stop 49 so that the latchbolt assembly 21 is free to move from the extended position. It can be appreciated from the Figure 9 that the free end 61 of the inner hub 33 has engaged an inner surface 52 of the shuttle 47 to force it against a rear wall 53 of the frame 23. Further rotation of

the inner hub 33 causes the latchbolt assembly 21 to move to the retracted position as illustrated in Figure 10. This locates the head 22 of the latchbolt assembly sufficiently within the housing 7 to allow the door 9 to be opened.

[0072] It should be appreciated that as the cam 19 or hub 33 is rotated in the opposite direction, so as to return it to the position illustrated in Figure 2, the latchbolt biasing means 24 will urge the latchbolt 21 to return to the extended position as illustrated in Figure 2. Furthermore the shuttle biasing means 48 will also urge the shuttle 47 to adopt the first position as illustrated in Figure 2. However with the auxiliary bolt 26 in the extended position the arm 91 of the detent 46 will engage the body 28 preventing the detent from adopting the blocked position.

[0073] When the door 9 is in the closed position, it is generally desirable that the retraction of the latchbolt assembly 21 be by way of a user operating the inner or outer cylinder lock 65, or inner or outer handle 12, 15 only. More specifically, it is generally undesirable that the mortice lock assembly 4 be manipulated by applying end pressure to the head 22 of the latch bolt assembly 21 in order to move the latch bolt assembly 21 to a retracted position. The deadlatching mechanism 29 according to the invention utilises the detent 46 to prevent this unauthorised movement of the latch bolt assembly 21. The preferred form of detent 46 illustrated is seated on the frame 23 and is movable between the blocked and unblocked positions in a direction normal to movement of the latchbolt assembly 21 between the extended position and retracted position. This movement of the detent 46 occurs before retraction of the latchbolt assembly 21 commences.

[0074] Referring now to Figure 12 which illustrates the mortice lock assembly 4 from Figure 1 with the outer cylinder lock assembly 5 and inner cylinder lock assembly 6 attached to the housing 7. The housing 7 is formed from the base 83 and a cover 84 which is fastened to the base by a number of screw fasteners 85. Figure 12 also illustrates a front plate 10 and a face plate 80 which are both attached to the housing 7 by respective screw fasteners.

[0075] According to another aspect of the invention, the base 83 and cover 84 are each formed with a rebated zone on an outer surface thereof. Figure 13 illustrates the rebated zone in the cover and it should be understood that the base includes an

equivalent rebated zone on the outer side. Each rebated zone is formed in the outer surface of the base and cover to receive the inner plate 86 and outer plate 87 respectively. It can be further appreciated from Figure 13 that the rebated zone in the cover occupies approximately 60% of the outer surface of the cover, however it is preferred that the rebated zone occupies no less than 30% of each outer surface of the base and cover and a coverage of 50% to 80% is most preferred.

[0076] It should be appreciated by comparing Figures 12 and 13 that the rebated zone has a depth so the inner plate and outer plate do not project beyond the thickness of the housing 7. In this regard it is preferred that the inner plate and outer plate have a thickness that is no greater than the depth of the rebated zone.

[0077] Referring again to Figure 13 which illustrates the cover 84 including a cover opening which is of substantially rectangular shape. It can be appreciated from Figure 14 that the cover opening is configured to accommodate the body 21 of the latchbolt. An equivalent opening is provided in the base, hereinafter referred to as a base opening, which also accommodates the body of the latchbolt. The base opening and cover opening provide a guide for the body of the latchbolt as it moves from the extended position as illustrated in Figure 14 to a retracted position as illustrated in Figure 15. It can be appreciated by comparing Figures 14 and 15 that an edge of the cover defining a lower portion of the opening provides a guide rail along which the body of the latchbolt slides when moving between the extended and retracted positions. It should be appreciated that the base 83 includes an equivalent edge for guiding the outer side of the latch body. It should also be appreciated that once the inner plate 86 and outer plate 87 are attached to the cover and base respectively, that a portion of the latchbolt body will engage the inner plate 86 and outer plate 87 so as to retain the body in an aligned orientation. Accordingly, it is preferred that at least a component of the latchbolt body be formed from stainless steel as it slides over the stainless steel inner plate 86 and outer plate 87.

[0078] Referring again now to Figure 13 which illustrates a cylinder pin which in use is provided for retaining the inner cylinder lock assembly attached to the cover 84. An equivalent cylinder pin is already installed in the base and retains the outer cylinder lock assembly 5 in connection with the base. It can be noted that the front plate 10 includes a pin opening to receive both the pins therethrough. This pin

opening aligns with a pin groove formed in the outer surface of the cover 84 and base 83 (only the groove in the cover 84 is visible in Figure 13). Each pin groove may be shaped to retain each pin therein so as to inhibit movement of either pin in a direction substantially normal to the outer surface of the cover 84 or base 83. Alternatively or additionally, the inner plate 86 and outer plate 87 may cooperate with the pin groove to prevent movement of each pin in a direction normal to the outer surface of the base 83 and cover 84.

[0079] It is preferred that the inner plate 86 and outer plate 87 include at least one slot for receiving a flange associated with the housing 7. Figure 12 illustrates the inner plate including three slots to accommodate three flanges. It can be appreciated from Figure 13 that the cover includes equivalent slots to receive each flange which extends from within the housing. It is preferred that each flange extend continuously through the housing extending out of the rebated zone and into the slots formed in the inner plate and outer plate. These slots facilitate accurate location of the inner plate and outer plate within the rebated zone.

[0080] It is preferred that the inner plate 86 and outer plate 87 both include a leading edge zone which is configured to facilitate accurate location within the rebated zone. Figure 13 illustrates the front plate 10 including a head opening to receive the head of a latchbolt, and an auxiliary opening to receive the head of the auxiliary bolt therethrough. It can be appreciated that the leading edge zone of the inner plate 86 and outer plate 87 is of a profile to locate within the head and auxiliary openings of the front plate, but not project beyond those openings. Once the face plate 80 is attached to the front plate 10, that leading edge zone is obstructed from view.

[0081] It is preferred that the housing be formed from a cast material, and a cast material such as a zinc alloy has been found to be most preferred. It ought to be appreciated that by providing the base and cover with openings to receive the latchbolt, and the rebated zone, that the volume of metal required to produce the housing can be reduced from a housing cast without those features.

[0082] Another aspect of the invention will now be described with reference to Figures 16 to 27, which illustrate a short backset mortice lock assembly 4. The equivalent or similar features to the standard backset mortice lock assembly

illustrated in Figures 1 to 11 will be afforded the same reference numerals in these figures with the addition of a prefix of 300. It should be appreciated that short backset mortice lock assembly 4 is suitable for use with the same or similar inner door furniture 3, outer door furniture 2, inner cylinder lock assembly 6 and outer cylinder lock assembly 5 as illustrated in Figure 1. The short backset mortice lock assembly 4 however is more suited for use with doors 9 that have limited space for a mortice cavity such as a metal framed door utilising a channel of limited depth.

[0083] Referring now to Figure 16 which illustrates a preferred embodiment of the short backset mortice lock assembly 304 with the cover 384 (see Figure 17) detached from the base 383, revealing in summary an actuator 332, a latchbolt 321 and an auxiliary bolt 326. The actuator 332 illustrated includes an inner hub 333, an outer hub 334 and a rotatable arm 412 formed separately from and positioned between the inner hub 333 and outer hub 334. Each of the inner hub 333 and outer hub 334 include a spindle recess 335 (see Figure 17 for spindle recess 335 of outer hub 334) to receive a portion of the inner spindle 13 and outer spindle 16 (see Figure 1). Each of the inner hub 333 and outer hub 334 are independently rotatable about the actuator axis (see Figure 1) so as to rotate the rotatable arm 412 about the actuator axis XX.

[0084] The latchbolt 321 illustrated in Figure 16 includes a bevelled head 322 and a frame 323 within the base 383. The latchbolt 321 is illustrated in Figure 16 in an extended position whereby the head 322 projects out through the front wall 310 of the base 383. A latchbolt biasing means 324 acts between a rear wall 320 of the base 383 and the frame 323 for urging the latchbolt 321 to adopt the extended position. The latchbolt biasing means 324 illustrated is in the form of a compression spring, however this form of biasing means may vary.

[0085] Figure 16 illustrates the auxiliary bolt 326 having a wedge shaped head 327 which extends out through the front wall 310 of the base 383. The auxiliary bolt 326 also includes a body 328 (see Figure 19) which is located within the base 383. An auxiliary bolt biasing means 330 acts between the body 328 and the rear wall 320 of the base 383 for urging the auxiliary bolt 326 towards the extended position as illustrated in Figure 16. The auxiliary bolt biasing means 330 illustrated in the form of a compression spring, however this form of biasing means may vary.

[0086] The mortice lock assembly 304 illustrated in Figure 16 also includes a lock mechanism 337 which in summary includes a slide detent 338 which acts on an inner pawl 339 and an outer pawl 413. Figure 16 illustrates the slide detent 338 in a disengaged position relative to the inner pawl 339 and outer pawl 413, which renders the lock means 337 in an inactive condition. The lock mechanism 337 is adjustable to an active condition by rotation of the cam 340 of the outer cylinder lock 305 (or cam 340 of the inner cylinder lock 306, see Figure 17) so the cam 340 engages the slide detent 338. This causes the slide detent 338 to move down relative to the rear wall 320 of the base 383 and engage the inner pawl 339 and/or outer pawl 413. When the inner pawl 339 or outer pawl 413 is engaged by the slide detent 338, it causes rotation in an anticlockwise direction about the pawl shaft 414 so as to engage the inner hub 333 or outer hub 334. The lock mechanism 337 is considered to be in an active condition when the inner hub 333 or outer hub 334 is prevented from rotating about the actuator axis XX.

[0087] The mortice lock assembly 304 according to this other aspect of the invention includes a deadlatching means 329 that when in an active condition inhibits movement of the latchbolt 321 from the extended position, while the auxiliary bolt is in the retracted position. Figure 16 illustrates a portion of the deadlatching means 329 which is more clearly illustrated in Figures 18 and 19. The deadlatching means 329 according to the invention includes a detent means 346 and a release means 345. In the embodiment illustrated the release means 345 and detent means 346 are formed by a release portion 345 and detent portion 346 which are formed as a single member. It should be appreciated that having regard to the first embodiment of the invention illustrated by at least Figure 2, that the release portion 345 may be formed separately from the detent portion 346.

[0088] A detent biasing means 390, which in the embodiment illustrated in the form of a compression spring, acts between the detent portion 346 and the frame 323 of the latchbolt 321. The detent portion 346 is formed with a folded head 415 that receives an upper portion of the compression spring 390, and the frame 323 is formed with a shelf 416 (see Figure 19) to support a lower end of the compression spring 390, which urges the detent portion 346 towards a raised position relative to the frame 323 of the latchbolt 321.

[0089] The detent portion 346 illustrated in Figures 18 and 19 includes a lower leg 417 with a foot 418 that locates within a slot 419 (see Figure 17) formed in the side wall 420 of the base 383. Figure 17 illustrates the detent portion 346 in the lowered or unblocked position whereby the foot 418 is free to move horizontally within the slot 419. When the detent portion 346 is raised by the detent biasing means 390 to a blocked position, the foot 418 positions adjacent to a stop formation 421 adjacent the slot 41, preventing movement in the horizontal direction.

[0090] Figure 18 illustrates the release portion 345 having a first ramp surface 422 at a lower end thereof, and a second ramp surface 423 at an upper end thereof. The first surface 422 interacts with the rotatable arm 412, and the second surface 423 interacts with the cam 319 of the cylinder lock 305 in a manner that will be described in greater detail by reference to later illustrations. Figure 19 illustrates the auxiliary bolt 326 having a ramp surface 425 between the head 427 and a toe 426 of the body 328. An upper edge 424 of the body 328 interacts with an upper shoulder 427 on the frame 323 of the latchbolt 321 whilst the auxiliary bolt 326 moves between the retracted and extended position. The ramp surface 425 of the auxiliary bolt 326 interacts with a shoulder 428 formed on the release portion 345 so as the auxiliary bolt 326 moves from the retracted position to the extended position, the release portion 345 is driven down relative to the frame 323 of the latchbolt 321. The shoulder 428 on the release portion 345 locates adjacent the toe 426 of the auxiliary bolt 326 when the auxiliary bolt 326 is in the extended position so as to retain the detent portion 346 in the unblocked position.

[0091] The manner in which the latchbolt 321 is retracted by the actuator 332 will now be described with reference to Figures 20 to 24. Referring firstly to Figure 20 which illustrates the latchbolt 321 in the extended position, the auxiliary bolt 326 in the retracted position so the deadlatching means 329 is in the active condition. When the deadlatching means 329 is in the active condition, the foot 418 of the detent portion 346 is positioned adjacent the stop formation 421 of the slot 419. Rotation of the inner hub 333 from that illustrated in Figure 20 to Figure 21 causes the rotatable arm 412 to rotate about the actuator axis XX sliding along the first surface 422 of the release portion 345. This draws the release portion 345, and with it the detent portion 346 down relative to the body 323 of the latchbolt 321, so as to move the foot 418 of the detent portion 346 out of alignment with the stop formation 421 in the slot 419

(see also Figure 22). Further rotation of the inner hub 333 is illustrated in Figure 23 causing the rotatable arm 412 to rotate and move the latchbolt 321 to the retracted position as illustrated. Figure 24 illustrates the latchbolt 321 in the retracted position with the foot 418 of the detent portion 346 moved along within the slot 419.

[0092] The manner in which the latchbolt 321 is retracted by operation of the cylinder cam 319 will now be described with reference to Figures 25 to 27. Figure 25 illustrates the latchbolt 321 in the extended position, the auxiliary bolt in the retracted position so the deadlatching means 329 is in the active condition inhibiting retraction of the latchbolt 321. The cylinder cam 319 of the outer cylinder lock assembly 305 has been rotated so that a free end of the arm 340 touches the second surface 423 of the release portion 345. Further rotation of the cylinder cam 319 as illustrated in Figure 26 causes the free end of the arm 340 to slide over the second surface 423 as the release portion 345 is driven down relative to the body 323 of the latchbolt 321. This draws the detent portion 346 down so the foot 418 is out of alignment with the stop formation 421 in the slot 419 (see Figure 22). Further rotation of the cam 319 moves the latchbolt 321 to the retracted position as illustrated in Figure 27.

[0093] It ought to be appreciated from the foregoing that the deadlatching means 29, and release means as hereinbefore described provides a relatively simply alternative to existing deadlatching mechanisms currently available. In particular the loss motion of operating either the cylinder locks 5, 6 or handles 12, 15 causing the detent 46 to move from the blocked position to the unblocked position, before retraction of the latchbolt 21 simplifies the deadlatching mechanism. Furthermore, the combination of a last housing with stainless steel plates improves the security of the mortice lock assembly whilst maintaining the ease of assembly of the mortice lock.

[0094] Future patent applications may be filed in Australia or overseas on the basis of or claiming priority from the present application. It is to be understood that the following provisional claims are provided by way of example only, and are not intended to limit the scope of what may be claimed in any such future application. Features may be added to or omitted from the provisional claims at a later date so as to further define or re-define the invention.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A mortice lock assembly for use with a door including a housing, a latchbolt movable relative to the housing between an extended position and a retracted position, an auxiliary bolt movable relative to the housing between an extended position and a retracted position, deadlatching means that when in an active condition inhibits movement of the latchbolt from the extended position while the auxiliary bolt is in the retracted position, the deadlatching means including a detent mounted on the latchbolt that adopts a blocked position when the deadlatching means is in the active condition and adopts a unblocked position when the deadlatching means adopts the inactive condition, the deadlatching means also including a release means mounted on the latchbolt being operable to adjust the position of the detent from the blocked position towards the unblocked position prior to movement of the latchbolt from the extended position.
2. A mortice lock assembly according to claim 1 including a stop that the detent abuts so as to prevent movement of the latchbolt from the extended position when the detent is in the blocked position.
3. A mortice lock assembly according to claim 2 wherein the stop is fixed relative to the housing.
4. A mortice lock assembly according to claim 1, 2 or 3 including detent biasing means for biasing the detent towards the blocked position.
5. A mortice lock assembly according to any one of the preceding claims wherein the detent and auxiliary bolt each have complimenting surfaces that slide over each other when the auxiliary bolt moves between the retracted position and the extended position.
6. A mortice lock assembly according to claim 5 wherein at least one of the complimenting surfaces includes a ramp portion so as to cause movement of the detent in a direction normal to movement of the auxiliary bolt while moving between the retracted position and the extended position.

7. A mortice lock assembly according to any one of the preceding claims wherein the latchbolt includes a head which projects out of the housing when the latchbolt is in the extended position, and a body that is housed within the housing.
8. A mortice lock assembly according to claim 7 wherein the detent is movable with the body when the latchbolt moves between the extended position and the retracted position, and the detent is movable relative to the body when adjusting between the blocked position and the unblocked position.
9. A mortice lock assembly according to any one of the preceding claims wherein the release means is formed separately from the detent and includes a movable member that is movable relative to the body and interacts with the detent so that movement of the movable member between a first position a second position adjusts the detent between the blocked position and the unblocked position.
10. A mortice lock assembly according to claim 9 wherein the movable member is movable with the body when the latchbolt moves between the extended position and the retracted position, and the movable member is movable relative to the body when adjusting between the first position and the second position.
11. A mortice lock assembly according to claim 9 or 10 wherein the movable member is a shuttle which moves linearly between the first position and the second position in a direction substantially aligned with a direction of movement of the latch bolt.
12. A mortice lock assembly according to claim 11 including a shuttle biasing means for biasing the shuttle towards the first position which corresponds to the detent being in the blocked position.
13. A mortice lock assembly according to any one of claims 9 to 12 wherein the movable member interacts with the detent by way of complimentary surfaces so that movement of the movable member between the first position and the second position is substantially normal to movement of the detent between the blocked position and the unblocked position.

14. A mortice lock assembly according to claim 13 wherein the complimentary surfaces include a ramp surface formed on the detent and a ramp surface formed on the movable member.
15. A mortice lock assembly according to any one of claims 7 to 14 wherein the detent is mounted on the body.
16. A mortice lock assembly according to any one of claims 9 to 14 wherein the movable member is mounted on the body.
17. A mortice lock assembly according to any one of the preceding claims including an actuator that is operable to move the latchbolt from the extended position to the retracted position, the actuator also operates the release means.
18. A mortice lock assembly according to claim 17 including a lock mechanism that when in an active condition renders the actuator inoperable, the lock mechanism for interaction with a cylinder lock when mounted to the mortice lock housing and having a cylinder cam, the lock mechanism being configured so that rotation of the cylinder cam an axis adjusts the condition of the lock mechanism, while the release means is configured such that rotation of the cylinder cam adjusts the release means.
19. A mortice lock assembly according to claim 18 wherein the lock mechanism includes a pawl that engages the actuator to prevent operation of the actuator when the lock mechanism is in the active condition.
20. A mortice lock assembly according to claim 18 or 19 wherein the cylinder cam is rotated about the axis in one direction to adjust the condition of the lock mechanism, and rotated in an opposing direction to operate the release means.
21. A mortice lock assembly according to claim 20 wherein rotation of the cam in said opposing direction also moves the latchbolt from the extended position towards the retracted position.
22. A mortice lock assembly according to any one of the preceding claims wherein the latchbolt, deadlatching means and the release means forms a subassembly, the housing having a slot to receive the subassembly for guiding its movement relative to the housing.

23. A mortice lock assembly according to claim 1, wherein the latchbolt includes a body located within the housing and a head that projects out of the housing when the latchbolt is in an extended position and substantially withdraws within the housing when the latchbolt is in a retracted position, the housing including a base and cover fastened to the base, the base and cover each having an outer surface with a rebated zone formed thereon, an inner plate and outer plate both formed from stainless steel fastened to the base and cover respectively in the rebated zone.
24. A mortice lock assembly according to claim 23 wherein each of the inner plate and outer plate have a thickness that is no greater than a depth of each rebated zone.
25. A mortice lock assembly according to claim 23 or 24 wherein each rebated zone occupies no less than 30% of each outer surface of the base and cover.
26. A mortice lock assembly according to any one of claims 23 to 25 including a base opening and a cover opening in the base and cover respectively, the base opening and the cover opening each associated with the body of the latchbolt for guiding the latchbolt between the extended position and the retracted position.
27. A mortice lock assembly according to claim 26 wherein the inner plate and outer plate are positioned so as to overlay the cover opening and base opening respectively.
28. A mortice lock assembly according to claims 26 or 27 wherein the latchbolt engages the inner plate and or outer plate when moving between the extended position and the retracted position.
29. A mortice lock assembly according to claim 28 wherein a component of the latchbolt associated with the body engages the inner plate and or outer plate.
30. A mortice lock assembly according to claim 29 wherein said component is formed of stainless steel.
31. A mortice lock assembly according to any one of claims 23 to 30 wherein the base and cover is cast from a metal that less hard than stainless steel.

32. A mortice lock assembly according to claim 31 wherein the metal is a zinc alloy.
33. A mortice lock assembly according to any one of claims 23 to 32 including a cover groove located in outer surface of the cover and an base groove locate in the outer surface of the base, each groove configured to receive a cylinder pin to secure a cylinder lock assembly to mortice lock assembly.
34. A mortice lock assembly according to claim 33 wherein the inner plate and outer plate overlay the cover groove and the base groove respectively.
35. A mortice lock assembly according to claim 33 or 34 including a front plate fastened to the base including a pin opening to receive each cylinder pin there through.
36. A mortice lock assembly according to claim 35 wherein the front plate includes a head opening to receive the head of the latchbolt, the inner plate and outer plate each having a leading edge zone that locates in the head opening.
37. A mortice lock assembly according to any one of claims 23 to 36 wherein both the inner plate and out plate include at least one locating slot, each slot for locating on at least one flange associated with the housing.
38. A mortice lock assembly according to claim 37 wherein each flange extends through the housing beyond the outer surface of the base and the cover into each rebated zone.
39. A mortice lock assembly according to claim 1 wherein the latchbolt includes a head which projects out of the housing when the latchbolt is in the extended position, and a body that is housed within the housing, the deadlatching means being mounted on the body.
40. A mortice lock assembly according to claim 39 wherein the deadlatching means includes a detent biasing means for biasing the detent means towards the blocked position, the latchbolt having a latchbolt biasing means for biasing the latchbolt towards the extended position, whereby the latchbolt biasing means applies a greater force than the detent biasing means.

41. A mortice lock assembly according to claim 40 wherein the detent biasing means acts between the body of the latchbolt and the detent means and applies its force in a direction that is substantially perpendicular to a direction in which the latchbolt biasing means is applied.

42. A mortice lock assembly according to claim 39 wherein the release means includes a release portion and the detent means includes a detent portion, the release portion being formed with the detent portion to move therewith.

43. A mortice lock assembly according to any one of claims 39 to 42 wherein the detent portion and the release portion move in a direction normal to movement of the latchbolt relative to the housing.

44. A mortice lock assembly according to any one of claims 1 or 39 to 43 wherein the housing is formed with a slot that interacts with the detent means, the slot including a stop formation that the detent means abuts so as to prevent movement of the latchbolt from the extended position when the detent is in the blocked position.

45. A mortice lock assembly according to claim 44 wherein the slot includes an aperture formed a wall of the housing with the detent means including a leg portion that locates in the aperture.

46. A mortice lock assembly according to any one of claims 1 or 39 to 45 wherein the release means includes a shoulder and auxiliary bolt includes a ramp surfaces that slide over the shoulder as the auxiliary bolt moves between the retracted position and the extended position so as to adjust the detent means from the blocked position to the unblocked position.

47. A mortice lock assembly according to any one of claims 1 or 39 to 46 including an actuator that is operable to move the latchbolt from the extended position to the retracted position, the actuator also operates the release means.

48. A mortice lock assembly according to claim 47 wherein the actuator includes a rotatable arm and the release means includes first surface, whereby rotation of the rotatable arm causes the rotatable member to slide over the first surface to operate the release means.

49. A mortice lock assembly according to any one of claims 47 or 48 including a lock mechanism that when in an active condition renders the actuator inoperable, the lock mechanism including a cylinder cam that is rotated to adjust the condition of the lock mechanism, the cylinder cam is also rotated to operate the release means.

50. A mortice lock assembly according to claim 49 wherein the release means includes a second surface, whereby rotation of the cylinder cam causes the cylinder cam to slide over the second surface to operate the release means.

51. A mortice lock assembly according to claim 49 or 50 wherein the lock mechanism includes a slide detent that interacts with the cylinder cam and at least one pawl that interacts with the slide detent and interacts with the actuator to prevent operation of the actuator when the lock mechanism is in the active condition.

52. A mortice lock assembly according to any one of claims 49 to 51 wherein the cylinder cam is rotated about the axis in one direction to adjust the condition of the lock mechanism, and rotated in an opposing direction to operate the release means.

53. A mortice lock assembly according to claim 52 wherein rotation of the cam in said opposing direction also moves the latchbolt from the extended position towards the retracted position.

54. A mortice lock assembly according to any one of claims 1 or 39 to 53 wherein the housing includes a front wall and a rear wall spaced from the front wall, the spacing being less than 50mm.