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JAIL LOCKING DEVICES AND THE LIKE

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FIG. 1.

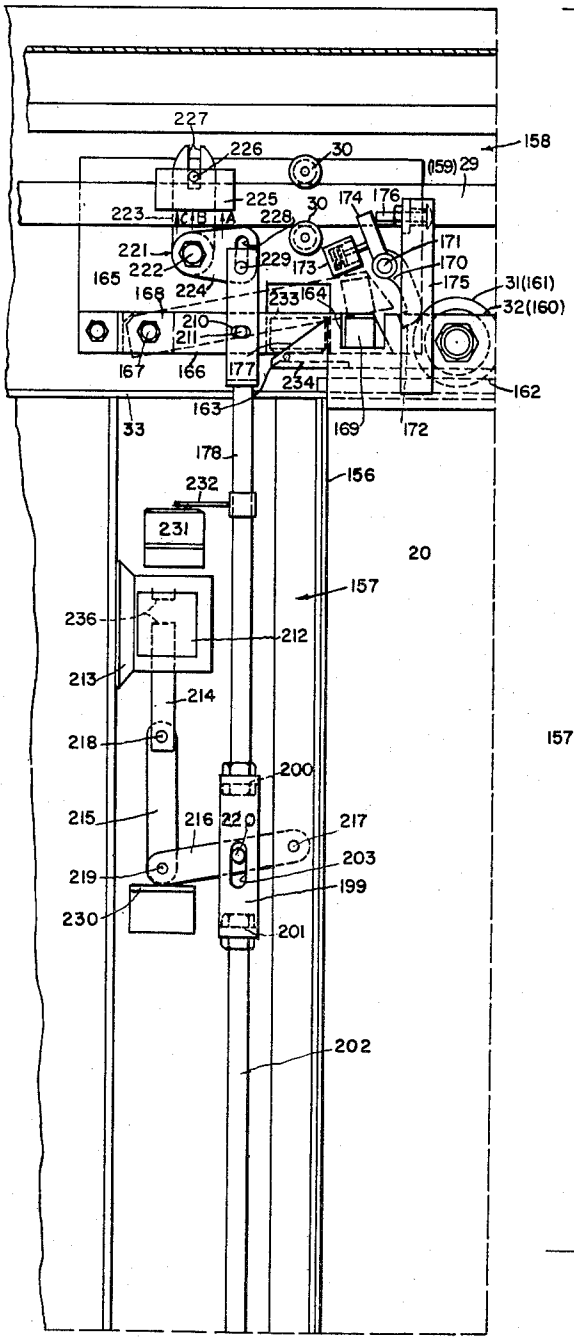
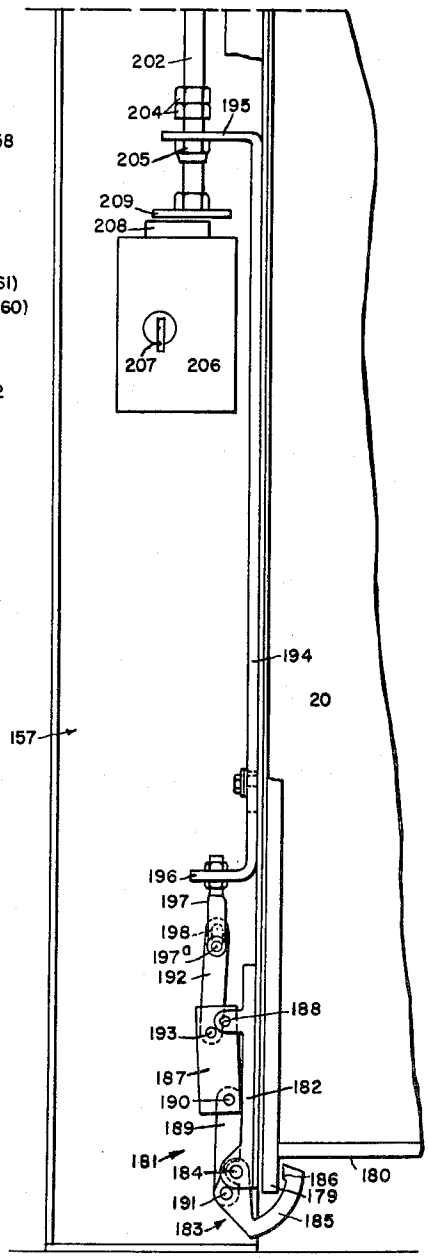


FIG. 2.



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JAIL LOCKING DEVICES AND THE LIKE

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5 Claims. (Cl. 189—7)

This invention relates to improvements in jail locking devices and the like. The improvements herein disclosed have to do with that type of jail locking construction in which provision is made for locking the door at both its upper and its lower edge portions, generally producing such top and bottom door edge locking functions at or near the front or closing end of the door, but not necessarily so. The present improvements also concern themselves with improvements in which a vertical lock operating bar is provided which is connected to and controls both of such top and bottom locking elements by movements of such vertical lock operating bar. Such vertical lock operating bar can be shifted vertically for producing the intended lock element operations, and provision is made for effecting such vertical shifts of such bar, or for controlling such shifts, either by operation of a control bar, or by a key operated unit selectively. Conveniently, the arrangement is such that such vertical lock operating bar normally produces locking operations at both the top and bottom edges of the door by gravity produced down movement to its lowest position. Provision is then made for raising such bar to its unlocking position, either by key operation or by control bar operation. In this connection the arrangement is such that in one position of the control bar the vertical lock operating bar is released so that it can be raised by the key operated unit to unlock both the top and bottom locking elements, but the vertical lock bar has not yet, when under these released conditions, itself actually produced any unlocking result. Thereafter, by raising such vertical lock bar, either by further control bar movement or by operation of the key operated unit, both of the top and bottom locking elements will actually be moved into their unlocking conditions.

A distinguishing feature in connection with the foregoing arrangements is that it is unnecessary to provide any locking element for engaging the central portion of the closing edge portion of the door, to effect locking at both of two points of lock. In other locking arrangements the closing edge portion of the door is provided with a tongue or projection extending in the direction of door closing movement, and which, as the door comes to its closing position, enters through an opening of the door frame to a location where it may be engaged by a key operated locking element to effect the key locking function. Such arrangements present the objectionable feature that they require perforation of the door frame at a location which can sometimes be reached by an unauthorized person, in which case, by stuffing foreign materials, such as rags or papers into such door frame opening, the intended locking by the key controlled element is prevented. Furthermore, it is undesirable to provide any projection extending from the closing edge portion of the door, since a person passing through the door opening, when the door is not completely opened, may be caught on such projection and injured thereby. All such objections have been avoided in the presently disclosed arrangements, in which no such projection from the closing edge portion of the door is necessary and none is provided, and still the door is effectively locked, when intended, at two widely separated locations, both top and bottom.

In connection with the foregoing features and objectives, it is a further object and feature of the invention to provide a control bar which may be operated by an authorized person, such as a guard, for controlling operations of one or a number of cell-locking devices. Such control bar extends to a location above the upper portion of the door or doors to be served by it. The arrangement is such that such control bar may be shifted to either of three basic positions, as follows: A deadlocked position, designated "A," in which all of the vertical lock control bars for the cells to be served by such control bar are deadlocked in their lowered positions to thus deadlock both the top and bottom locking elements of all of the cells served; second, a deadlock released position, designated as "B," in which the top and bottom locking elements of all of the doors are no longer deadlocked, but are still in their locked conditions; third, an unlocked position, designated as "C," in which all of the doors served by such control bar are actually unlocked, but are not opened, but may be opened individually at their respective locations.

The arrangements are such that when the control bar is in its position "B," deadlock released position, any selected door or doors may be individually unlocked by key operation performed at the location of such individual door or doors. By this arrangement, if a condition exists in which it is desired to either confine or release a person into or from any selected cell, by moving the control bar to its position "B," such individual cell door may be unlocked at its location, by proper key operation, still leaving the doors of all of the other cells locked, top and bottom, so that they cannot be opened without such a key operation, since they are not now deadlocked. After the intended operations have been completed at such selected individual cell, the control bar may be again moved to its deadlocked position, "A," thus again deadlocking all cells, including the one which was of particular interest.

A further feature and object of the invention relates to the provision of a simple electro-magnetic means for raising the vertical lock operating bars of the individual doors. In the embodiment hereinafter described such electromagnetic elements consist of electro-magnets with suitable operating connections from their armatures to the respective vertical lock operating bars. During key unlocking operation for any selected door the key operation actually raises the corresponding vertical lock operating bar against its weight and against the weight of both of the locking elements, top and bottom, served by such bar. In order to avoid adding to such weights thus imposed on the key operation, and to produce other benefits, the connections between the armature of each electro-magnet and the corresponding vertical lock operating bar are such that during key operation for raising such bar the corresponding armature and certain other elements are not raised from their base position, but are left sustained by a sustaining element to which they have returned by gravity. This operation and result are obtained by provision of a lost-motion connection between parts and of amount sufficient to ensure production of the desired result.

A further feature and object of the invention relates to the provision of an improved form of hook-like locking element for engaging and locking with the bottom portion of the door at its closed position. In this connection the following explanation is pertinent:

The leading edge of the bottom portion of the door (during closing movement) is provided with a downwardly extending lug which travels in a channel or trough during door opening and closing movements, such lug extending down into such trough. When the door comes to its fully closed position and into substantial contact with the vertical door frame element at such closed position, such lug is also close to the lower end of such door

frame element, and substantially closes the opening by which a confined person might otherwise gain improper access to such trough to interfere with elements contained therein. The hook-like locking element is pivotally connected to the lower portion of the door frame at the door closed position. Such element can then be rocked to carry its curved hook portion beneath the lower end of the door frame and beneath the lower end of the lug of the door, and come up again during such rock to a position where it lies in the path of travel of the lug, which such lug of the door must follow for a door opening operation. Thus, when such hook-shaped locking element had been rocked to its locking position after the door has been closed it effectively blocks opening movement of the lower portion of the door. By so designing such hook-like locking element and so pivoting it with respect to the door frame opening, that its pivotal point lies in alignment with the point of engagement of such hook element with the door lug, and in alignment with the direction of door travel, any door opening force developed in an effort to open the door will be produced on a line extending through both the pivotal point and through the point of engagement with the door lug, and thus no torque moment will be produced which would otherwise tend to rock such hook-like locking element in its unlocking direction of rotation. In fact the hereinafter disclosed arrangement is one in which a contrary effect would be produced, as will hereinafter appear.

Even so, if by any chance the confined person might be able to gain access to such hook-like portion he might be able to exert a rocking force thereon tending to rock such element in the unlocking direction. To meet this possibility, I have herein provided an arrangement wherein any rocking force produced on such hook-like element itself, in direction tending to rock it in the unlocking direction will produce a further locking effect in a toggle-like arrangement to effectively prevent such a rocking movement initiated at the hook-like element itself. This arrangement is such that the hook-like element can only be rocked back into its unlocked condition by a force originating at the location of the vertical lock operating bar.

Other objects and uses of the invention will appear from a detailed description of the same, which consists in the features of construction and combinations of elements hereinafter described and claimed.

This application is a division of my co-pending application for Letters Patent of the United States, Serial No. 595,495, filed July 2, 1956, now Patent No. 2,899,027, issued August 11, 1959.

In the drawing:

FIGURE 1 shows a front elevational view of the upper one-half of a construction embodying features of the present invention, with the cover plate removed; and

FIGURE 2 shows the front elevational view of the lower one-half of the construction shown in FIGURE 1.

The closing edge portion of the door is shown at **156**. It closes leftward to its closed position adjacent to the face of the pilaster **157**. Extending along the passage **158** above the various cells of the gang, and according to conventional practice is the control bar **159**. The hanger plate **160** is connected to the upper portion of the door and extends into such passage, the door supporting wheels **161** being journalled to such hanger plate and riding on the rail **162** according to conventional practice. In the illustrated embodiment an extension **163** reaches leftwardly (in the door closing direction) from the hanger plate and is provided with the recess **164** extending down from its upper edge. A bracket plate **165** is secured to the back wall of the structure behind the path of travel of the control bar and behind the hanger plate of the door. A latch bar **166** is pivoted to this bracket plate at **167**, the angle or Z-bar section **168** being secured to the left-hand portion of the bracket plate and overlying the proximate end portion of such latch, the pivot **167** extending into both the Z-bar and the bracket plate, and through the latch so as to ensure well guided movements of the latch during its locking and unlocking operations. This latch lies behind the extension element **163**. It carries at its free swinging end the forwardly projecting lug **169** which enters the recess **164** when the latch is lowered with the door in closed position to produce the locking of the upper edge portion of the door. Preferably both the recess and the lug **169** are of rectangular form, or at any rate are provided with proximate surfaces lying substantially normal to the direction of door travel so that once the latch has been fully lowered into the recess no amount of rightward force exerted on the door may produce a vertical component of force tending to raise the latch and free the door. A further object of such rectangular form of latch will appear presently when discussing the operations of the structure.

Slightly to the right of the closed position of the door and its hanger there is located a pendant hook element **170**, pivoted to the back wall of the enclosure at the point **171**. The lower end of this hook element is leftwardly hooked as shown at **172**, such hooked portion being so located above the path of travel of the door that when the latch has been raised into its dotted line position of FIGURE 1 the hook **170** when permitted or forced to do so may rock back clockwise to engage the lower edge of the latch and retain such latch in its raised (dotted line) position for the time being. Additionally to the gravitational urge for the latch to swing down into its latching position I have provided spring means urging such latch movement. This comprises a spring carried within a small socket **173** secured to the back wall of the enclosure, such spring urging an end abutment and pin rightwardly against the upper end portion **174** of the hook-element. An arm **175** is secured to the left-hand end portion of the hanger plate and extends upwardly high enough to engage the portion **174** of the hook element (through the medium of an adjustable pin **176**) so that just before completion of the door closing movement such pin presses against the portion **174** of the hook element, thus rocking such hook element counterclockwise far enough to release the latch just after the recess **164** has come into position to receive the lug **169** as the latch moves down. Thus the locking operation is permitted to be completed by such latch with the door in its fully closed position.

The leading end portion of the hanger extension **163** is provided with an upwardly facing cammed edge **177**. In case the latch should be in its lowered position as the door moved to its closing position such cammed edge would ride under the lug **169**, forcing such lug upwards and thus also raising the latch far enough to enable completion of the door closing movement with a snap action, the lug dropping into the recess when register of such parts had been completed, and the hook having been released by engagement of the pin **176** with the hook portion **174**.

The raising of the latch is produced by operation of a vertical locking bar **178** located within and protected by the pilaster **157**. This locking bar normally falls by gravity to its locking position; but it may be raised for the unlocking operation either manually through the medium of a key-lock device, or electrically, by energization of a solenoid.

I have provided the second door locking element already referred to under control of such locking bar, and adapted to engage the lower end portion of the closing edge of the door for the locking of the lower portion of the door. This second locking element is shown in FIGURE 2, and is of a type designed by the present inventor and well known in this art. The details of the lock shown in FIGURE 2 are, however, new in the present case. This construction is as follows:

A lug **179** extends down below the lower edge **180** of the door, being located at the closing end of such door. This lug is well protected against tampering by the

prisoner, by enclosures not illustrated herein. A locking unit **181** is located within the lower portion of the pilaster, including a bracket plate **182** secured to the inside face of the pilaster wall. A locking hook **183** is pivoted to this bracket plate at the point **184**. This locking hook is provided with a curved hook portion **185**, which, when the element **183** is rocked counterclockwise, will ride under the lug **179** of the door (the door being then in its closed position), and as such element **183** continues its rock such hook portion **185** will rise at the opposite side or face of the lug **179**, thus producing an obstruction against rightward opening movement of the door. It is here noted that the parts are so proportioned and related to each other that when such element **183** has been thus fully rocked counterclockwise into the position shown in FIGURE 2 the contacting face **186** of the hook will be located on a line parallel to the door opening movement and in direct alignment with the pivotal point **184** on which the entire element **183** is carried. Thus, no amount of direct pull on the door in the opening direction can produce a component of force tending to rock such element **183** into the unlocking direction.

A link block **187** is pivoted to the bracket **182** at the point **188**. A link **189** pivotally connects to both such link block at the point **190** and to the hook element **183** at the point **191**. The link block is so shaped and is so pivoted that its center of gavity tends to swing it far enough counterclockwise when it is released to produce a toggle effect by shifting the pivotal point **190** rightwardly beyond the line directly extending between the two pivotal points **188** and **191**. Accordingly, any force tending to directly act on and urge the hook element **183** clockwise in the unlocking direction will tend to rock the pivotal point **190** rightward from its position shown in FIGURE 2, and cause greater locking effect to be produced. Any force to rock the hook element clockwise to effectively release the door must come from the link block **187** by rocking that element clockwise. To this end the following arrangements are shown:

A link **192** has its lower end pivotally connected to the link block **187** at the point **193**, being a point such that up pull exerted by such link **192** will tend to rock the link block clockwise and thus produce unlocking operation. A U- shaped slide bar **194** is slidably mounted on the inside face of the pilaster, such slide bar including the upper and lower angle portions **195** and **196**, respectively. A stud **197** is adjustably secured to the lower angle portion **196**. A lost-motion pin and slot connection is established between the stud and the link **192**, such lost-motion connection including the pin **197a** carried by the stud and a longitudinal slot **198** formed in the link. The purpose of providing such lost-motion connection between these parts is as follows: Only a small vertical movement is needed to effect complete rock of the hook element **183** between its locked and unlocked conditions, such amount of movement being less than that vertical movement of the locking bar needed to effect other operations, presently to be explained.

The upper angle portion **195** of the slide bar **194** is connected to the locking bar section **178** by the following means: A U-shaped section **199** has its upper and lower angle ends **200** and **201** connected respectively to the locking bar section **178** and to a lower locking bar section **202**. The U-shaped section **199** is provided with a vertical slot **203** which comprises a portion of a lost-motion connection of a solenoid unit and such locking bar section, by which energization of such solenoid serves to raise the locking bar as presently explained. The lower end of the section **202** is extended through the upper angle portion **195** of the section **194** with freedom of movement of the section **202** vertically through such angle portion by a small amount of lost-motion. This lost-motion is adjustable by the upper nuts **204** threaded onto the section **202** above the angle portion **195**, and the single nut **205** threaded onto such section **202** beneath such angle portion **195**. This lost-motion thus established by adjustment of the nuts **204** and **205** is for the following protection: In case the hook element **183** should be jammed when in its open position by insertion of extraneous material into its path of movement, so that it could not be completely moved to its locked position, the locking bar section **194** would in such case be held in raised position. This would interfere with the proper locking functions at the location of the latch element **166** already described, so that the locking of the door at top as well as bottom would be prevented. The provision of the lost-motion between the locking bar sections **202** and **194** will protect against such a contingency since, in case of such jamming of the locking movement of the hook element **183** such as above suggested the locking bar section **202** may still descend an amount dependent on the lost-motion thus provided between the nuts **204** and **205**. That amount is sufficient to enable the proper locking functions to be performed at the upper edge of the door even when they cannot be performed at the lower edge of the door.

A key-lock unit **206** is mounted in the pilaster at a height convenient for key operation by the guard or other authorized person. This unit is of conventional key projected bolt construction, including the key opening **207** through which a proper key may be inserted, which when turned serves to project a bolt **208** and then retain such bolt in such projected position. The details of such key-operated unit need not be shown or described since devices of this type are well known in the arts. The locking bar section **202** is extended through the angle portion **195** of the slide bar **194** and past the location of the nut **205** and carries a plate **209** on its lower end in position for engagement by the lock bolt when projected upwardly by key operation. The parts are so proportioned that full bolt projection by the key operation will serve to raise the locking bar section **202** (and the sections **199** and **178**) sufficiently to produce full raising of the latch for unlocking operation. To this end the bar end is provided with a short crosswise extending slot **210** through which is extended a pin **211** carried by the latch **166** so that rise of the locking bar is communicated to the latch as a lifting thereof. Thus the raising movement of the locking bar produced manually by the key-operation serves to produce unlocking of the upper portion of the door by latch rise. Such rise of the locking bar so produced is also sufficient to cause unlocking of the lower portion of the door.

I have provided a solenoid **212** secured within the pilaster by the bracket **213**. The armature **214** of this solenoid is connected by a link **215** to a lever **216** pivoted to the pilaster at the point **217**. The connections of such link to the armature and to the lever are by pivot pins **218** and **219**. Thus the energization of the solenoid serves to raise its armature and accordingly the lever. A stud **220** carried by the lever extends through the slot **203** of the locking bar section already referred to, so that when the raising produced by the solenoid has taken up the lost-motion of such slot further rise of the armature (and the lever) will produce the needed rise of the locking bar to perform the desired unlocking operations. The solenoid energization may be produced under manual or other control by a push button or other element at a suitable location.

It remains to further describe the control bar and its functions and operations, and the means whereby these are attained. Such control bar may be moved to either of the three positions already described or referred to. These are shown in FIGURE 1, and are the positions "A," deadlocked, "B," deadlock released but the door still locked although conditioned for unlocking by key operation at the pilaster, and "C," unlocked, so that the door or doors may be opened by suitable means or man-

ually. These positions are correspondingly legended in FIGURE 1, wherein it is shown in its "B" position.

A bell-crank **221** is pivoted to the bracket **165** at the point **222**. The vertical arm **223** of such bell-crank extends up behind the control bar, and the horizontal arm **224** of such bell-crank extends horizontally beneath the control bar elevation. A plate **225** is secured to the control bar and carries a rearwardly extending pin **226** which reaches into and works within a slot **227** of the vertical arm **223**. Thus control bar movement to any of its three positions will produce bell-crank rock to a corresponding position. A pin and slot lost-motion connection is established between the upper portion of the locking bar section **178** and the horizontal arm of the bell-crank, such lost-motion connection including the slot **228** formed in the horizontal arm, and a pin **229** carried by the upper portion of the locking bar section.

The so-far described arrangements enable performance of various functions, including the following:

First: With the control bar in its deadlocked position "A" the bell-crank **221** is rocked rightwardly far enough to depress the locking bar its full extent. This will take up the lost-motion at the pin and slot location **228—229**, thus holding the latch down in its locking position with the door locked closed. The lost-motion **203—220** is sufficient to allow the locking bar to descend the extent needed to perform the above function, it being noted that a bracket **230** is carried by the back wall of the pilaster in position to limit the further downward movement of the lever **216**, but not until the desired full down movement of the locking bar has been executed. This downward movement of the locking bar also permits downward movement of the U-shaped member **194** far enough to allow the lower locking element **181** to perform its locking movement by gravity as already explained. At such extreme downward movement of the locking bar section **202** the key-operated bolt has not yet been contacted, or if contacted, only at the time the previous functions have been executed.

Second: Movement of the control bar to its "B" position (shown in FIGURE 1) rocks the bell-crank **221** far enough counterclockwise to provide the lost-motion shown at **228—229**, but without raising either the locking bar or, dependent on such raising, the latch element. However, such lost-motion **228—229** is now sufficient to allow rise of the locking bar and the latch for unlocking purposes, by other means, either manual or electrical. The key unlocking may now be performed, raising the plate **209** far enough to raise the locking bar to effect unlocking at both top and bottom of the door. Such raising of the locking bar to its needed extent may be effected without raising the lever **216** and resultant raising of the link **215** and armature of the solenoid. Thus the manual raising of the key-lock operation is relieved of the burden of also raising the weights of such link and lever, and the armature. However, the armature movement under solenoid excitation is sufficient to take up the lost-motion **203—220** and then produce rise of the locking bar that amount needed to effect desired locking operations.

Third: Movement of the control bar to its position "C" will effect rise of the locking bar sufficiently to produce those operations incident to such locking bar rise, already defined in the previous paragraph; but in the present case such locking bar rising is produced by the control bar movement from position "B" to position "C" instead of by key-operation.

For signal purposes I have, in FIGURE 1, shown the microswitch **231** carried by the rear wall of the pilaster, and the laterally extending light arm **232** carried by the locking bar section **178** in such position that this microswitch will have its biased spring leaf reversed by downward movement of the locking bar sufficient to produce the desired door locking operations. I have also shown the microswitch **233** located in proximity to the door closed position of the extension element **163** of the hanger plate. The said extension is provided with a rearwardly extending flange **234** which will engage the actuating button of the microswitch to effect such switch reversal just as the door reaches its fully closed position. By placing the contacts of both of the microswitches **231** and **233** in series circuit with each other the desired signal showing both conditions of door closed and locked is produced according to the principles already explained. Since the control bar operations may be effected from any convenient location and by any convenient means I do not deem it necessary to illustrate or describe the same in detail here. One such arrangement is shown and described in my co-pending application for patent on Improvements in Jail Locking Devices and the like, Serial No. 595,495, filed July 2, 1956, now Patent No. 2,899,-027, issued August 11, 1959 of which the present application is a division.

An important function produced by the lost-motion **203—220** is as follows:

When the armature of the solenoid is in its lowered position, the solenoid being un-energized, the air gap between such armature and the closed end of the magnetic circuit of the unit is a maximum as shown by the large gap **236** in FIGURE 1. Accordingly the reluctance of the magnetic circuit is a maximum and the pull which will be exerted by the unit is a minimum for a given magnetizing effect. As the armature moves up when the solenoid is energized the pull developed on such armature increases very rapidly due to shortening of the air-gap, and becomes a maximum just before the air-gap is finally closed by contact of the armature with the upper end of the field body. Due to the provision of the lost-motion it is not necessary for the armature to develop a pull sufficient to raise the locking bar until such lost-motion has been taken up by preliminary armature up-movement. Then, when the lost-motion has been taken up the armature has already reached a position such that the pull has greatly increased, and to an amount conveniently sufficient to ensure the desired rise of the locking bar. Furthermore, during such lost-motion movement the armature and directly connected parts will have developed considerable momentum so that when the lost-motion is finally taken up this momentum will also assist in producing the desired rising movement of the considerable weight of the locking bar and connected parts.

It is noted that since the extension **163** of the hanger plate of the door is provided with the cammed edge **177** such door can be moved to its closed and locked condition without the need of latching the latch element **166** in its raised position by the hook element **170**. Thus, assuming that the control bar is in its "B" position so that the locking bar and the latch are not deadlocked but are in their lowered positions, as the door moves to its final closing position the latch (and locking bar) will be raised by the cam edge engagement with the lug **169**, raising the latch and then allowing it to drop into the notch **164** for the locking condition. Thus, under normal conditions of operation the need does not exist for retaining the latch in its raised condition by use of the hook element **170**.

However, it is also noted that lowering the locking bar (which is connected to the latch) also rocks the lower locking element **183** into the position shown in FIGURE 2 so that the hook portion **185** of such locking element then projects beyond the lower lug portion **179** of the structure. Under such conditions the prisoner might be able to gain access to such projecting hook element and either damage it or jam it by use of foreign materials, so that the locking mechanism would not function properly, it being noted that we are now considering a condition which exists while the door is in open condition. By providing the hook element **170**, which engages the latch at the time the door is unlocked, and retains the latch in its raised condition, thus also retaining the locking bar

raised, and retaining the lower hook element 183 retracted leftwardly of the lower lug portion 179 of the door, such an improper action of the prisoner is prevented since it is not possible for him to then gain access to the hook element 183 as long as the same is retained in its thus retracted condition.

I claim:

1. In a jail locking device, the combination with a vertical cell door and means to support the same for horizontal travel between a door closed and a door open position, of means to lock the door at said closed position, comprising a first top door lock engaging element having an upwardly extending abutment facing in the direction of door opening movement, a bottom second door lock engaging element comprising a downwardly extending flange on the bottom portion of the door and having an abutment facing in the direction of door opening movement, a first top door locking hook pivoted to a stationary part adjacent to the top door lock engaging element at the door closed position for rocking movement between a lowered door locking position and a raised door unlocking position, said first top door locking hook having a hook portion movable into the path of travel of the abutment of the first top door engaging element when the top door locking hook is in its lowered door locking position, and movable above said path of travel when said hook is in its raised door unlocking position, a second locking hook pivoted to a stationary part adjacent to the bottom second door lock engaging element at a location in alignment with the second door lock engaging element flange and at a location adjacent to said flange when the door is in closed position and at the side of said flange opposite to the abutment face of the flange, said second locking hook being movable between a second door lock element engaging position and a position of non-engagement with said second door lock element and having a curved hook portion below the pivotal point of said hook and having a flange engageable end portion, said hook being of form to extend beneath the second door lock engaging element flange and upwardly with its flange engageable end portion into the path of travel of said flange when said curved hook portion is rocked into door lock engaging position and to rock down and below the lock engaging element flange with said hook end portion below the path of travel of the flange for door opening movement, a vertical lock operating bar adjacent to the door closed position, means to support said bar for movement in vertical direction, said lock operating bar comprising a link element unit extending between the top door locking hook and the second locking hook, said link element unit including at least one lost motion lock operating bar section between the top door locking hook and the second locking hook, said lost motion section including a lost motion driving element and a lost motion driven element constituted for movement of the driving element in the unlocking direction without movement of the driven element, by an amount of movement permitted by said lost motion section, operating connections between the driving element and the first top door locking hook constituted for raising movement of said first top door locking hook into unlocking position when the driving element is raised, operative connections between the driven element and the second locking hook constituted for movement of said second locking hook in the unlocking direction to its unlocked position when the lost motion driven element is moved in the unlocking direction by movement of the driving element an amount more than said permitted lost motion, said lost motion driving and driven elements being constituted for permitting movement of the second locking hook and the lost motion driven element in the unlocking direction without movement of the lost motion driving element in said unlocking direction, together with means to move the lost motion driving element in the unlocking direction and to permit movement of said driving element in the locking direction, selectively.

2. A structure as defined in claim 1, wherein the means to raise the lost motion driving element comprises an abutment in engagement with said element and having a downwardly facing lifting surface, together with a key lock operated unit, means to mount said unit in proximity to the abutment aforesaid, said unit including a key actuated bolt movable in said unit towards and from the lifting surface of the abutment, and key operated means in said unit in connection with said bolt for actuation of the bolt towards or from the surface of the abutment.

3. A structure as defined in claim 2, together with electro-magnetic means to raise and permit lowering of the lost motion driving element, said means comprising a lever arm, a pivotal connection for said lever arm to a stationary part, a second lost-motion connection between said lever arm and the first mentioned lost motion driving element, including a vertical slot in the first mentioned lost motion driving element and a pin connected to the lever arm, a solenoid secured to a stationary part, a vertically movable lifting armature in said solenoid, an operative connection between the armature and the lever arm, and means in connection with a stationary element constituting an abutment in position to limit the lever arm and armature downward movement.

4. A structure as defined in claim 3, wherein the second lost-motion connection between the lever arm and the first mentioned lost motion driving element and the abutment which is in position to limit the lever arm and armature downward movement are proportioned for limitation of the downward movement of the lever arm and the armature with the upper lock bar section in downward moved position corresponding to top bar locking hook in its locking position.

5. A structure as defined in claim 4, wherein said downward movement limiting abutment and said lost-motion connection between the lever arm and the first mentioned lost motion driving element are also proportioned for upward movement of the said first mentioned lost motion driving element and corresponding raising of the top door locking hook to raised door unlocking position while the lever arm and armature are in supporting engagement with said abutment.

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