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[54] KEY-CONTROLLED DOOR LOCK

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292/DIG. 31

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[57]

ABSTRACT

A swinging door, paddle-type, key-controlled flush bolt lock made primarily of metal stampings, having a handle in the deeper part of a two level recess and the key control in the shallower part of the recess at the non-pivoted end of the handle such that the key control is readily accessible to an operative but does not protrude from the front of the lock. The key control includes a cam selectively movable into and out of the path of a member which retracts the bolt upon movement of the handle in one direction.

[56]

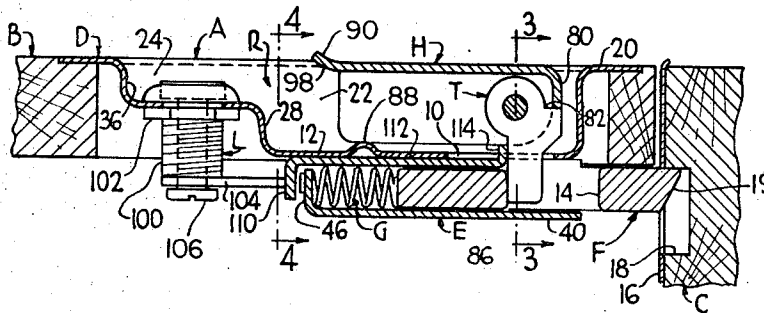
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4 Claims, 4 Drawing Figures



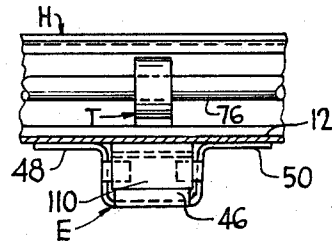
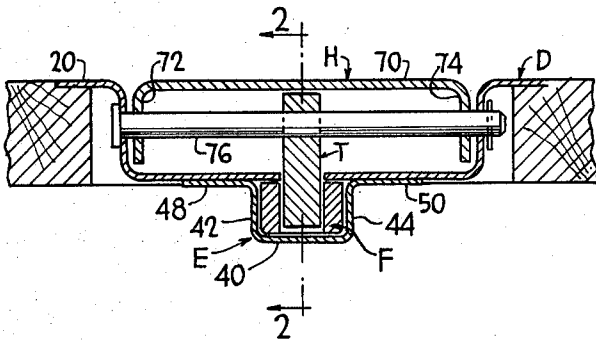
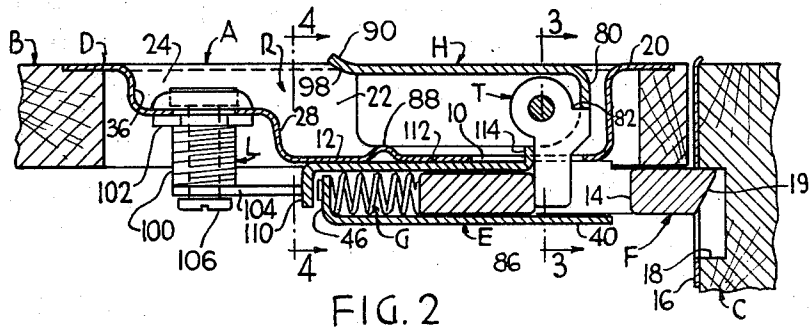
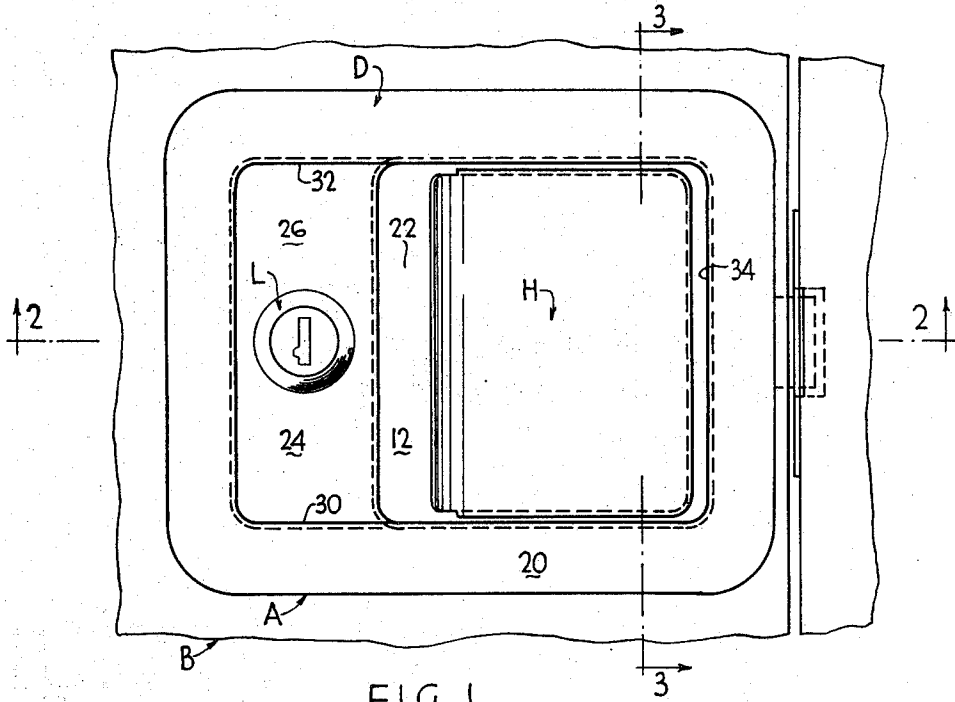


FIG. 3

FIG. 4

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KEY-CONTROLLED DOOR LOCK

FIELD OF INVENTION

This invention relates to swinging door, key-controlled, spring-biased bolt locks.

SUMMARY OF INVENTION

The invention provides a new and improved paddle-type, flush mountable, key-controlled cam and external manipulator-operated, spring-biased bolt, swinging door lock or fastener that can be quickly and easily installed, is rugged and durable in construction, comprises a relatively small number of parts which for the most part are metal stampings and is therefore inexpensive to produce and assemble, and in which the key lock is located in an extension of the handle recess, preferably about one-half the depth of the recess proper and at the non-pivoted end of the handle, and has a cam selectively movable into and out of the path of a member engageable with a member of the bolt operating mechanism for selectively limiting movement of the member in the direction to retract the bolt without interfering with retraction of the bolt upon its engagement with a striker plate.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a fragmentary front elevational view of a door and adjacent door frame having a lock embodying the invention mounted in the door;

FIG. 2 is a longitudinal sectional view, with parts in elevation, approximately on line 2—2 of FIGS. 1 and 3;

FIG. 3 is a transverse sectional view, with parts in elevation, approximately on the line 3—3 of FIGS. 1 and 2; and

FIG. 4 is a sectional view approximately on the line 4—4 of FIG. 2.

DESCRIPTION OF PREFERRED EMBODIMENT

The lock of the present invention can be used on any swinging door, but is especially suited for use on doors of industrial cabinets, for example, on doors of merchandise, tool, equipment and like cabinets or compartments of merchandise delivery and utility trucks, etc. The preferred embodiment of the invention is the lock A of the drawings where it is shown for illustrative purposes mounted in an opening or recess 10 in a vehicle compartment closure door B. The door B is of the swinging type, may be of any suitable construction, and the ledge or side thereof opposite the lock may be hinged to the door frame C of the vehicle or a part thereof in any suitable manner.

The lock A comprises, in general, a recessed mounting or body member D, a bolt housing E welded to the rear side of the mounting member D, a bolt member F slidable in the bolt housing and biased by a spring G to a projected or latching position, and an actuating handle H pivoted in the two level recess R of the mounting member D and operable through a cam-type bolt retracting trigger member T to retract the bolt member F against the bias of the spring G. The bolt F is preferably made of a self-lubricating material such as molded glass-filled Nylon. It may, however, be otherwise constructed. The trigger member T projects through an elongated slot 10 in the bottom wall part 12 of the recess R in the mounting member D and into an elongated slot 14 in the bolt member F. A striker plate 16 mounted on the doorframe C is provided with an opening 18 into which the bolt F extends when the door B is in closed position. The projecting end of the bolt F is inclined as at 19 at an angle of 60° to the length of the bolt so that the bolt can be retracted by its engagement with the striker plate as the door is closed without the necessity of the operative manipulating the handle T. Other suitable angles of inclination may be employed on the end of the bolt, for example, 45°.

The mounting or body member D comprises a rectangular pan-shaped sheet metal stamping member having a rectangular recess R opening into its front side and surrounded by a

flange part 20. The right and left-hand ends 22, 24, respectively, of the recess, as viewed in FIG. 1 and 2, are of different depths. The wall part 12 of the mounting member D forms the bottom of the deeper right-hand recess part 22 and the bottom wall part 26 forms the bottom or back of the shallower recess part 24. The left and right-hand bottom or back wall parts 12, 26 of the recess R are connected by a vertical wall 28. The recess has opposed side walls 30, 32 and opposed end walls 34, 36 which with the bottom wall parts 12, 26 and the step wall 28 define the two level shallow recess R.

The bolt housing E is a channel-shaped sheet metal stamping member having a web or bottom wall 40, a pair of opposed side walls 42, 44, a rear end wall 46 and flanges 48, 50 projecting outwardly from the side walls and welded to the bottom wall part 12 of the mounting member D. The bolt housing E with the bottom wall part 12 of the mounting member provide a rectangular aperture within which the bolt F is slidably supported. The bolt F is generally rectangular in cross-sectional shape corresponding essentially with that of the aperture within which it is slidably supported and the rear or left-hand end of the bolt, as viewed in FIG. 2, provides an abutment for the right-hand end of the spring G. The left-hand end of the spring abuts against inwardly bent part 46 of the bolt housing E which forms the bottom or left-hand end of the aperture within which the bolt reciprocates.

The handle H is a sheet metal stamping member comprising a generally rectangular substantially flat plate like portion 70, a pair of intumed flanges 72, 74 along the sides of the portion 70 and which lie adjacent the longitudinal side walls 30, 32, respectively, of the recess R in the mounting member D. The handle H is pivotally connected adjacent to its right-hand end to the mounting member D, that is, the end adjacent to the projecting end of the slide bolt F, by a hinge or pintle pin 76 extending through aligned openings in the side flanges 72, 74 of the handle member H and the side walls 30, 32 of the mounting member D. One end of the pintle pin is headed and the other end is apertured for the reception of a cotter pin which retains the parts assembled while permitting ready assembly and disassembly thereof. At the pivoted end thereof, the handle H is provided with an intumed flange 80 which engages an abutment surface 82 of the bolt actuating trigger member T which surface is offset to the right from the pivot pin. The trigger member T has an extension or blade part 86 which extends through the elongated slot 10 in the mounting member and into the slot 14 in the bolt. The left-hand side of the blade 86 of the trigger member normally abuts against the left-hand end of the slot. The slot 14 in the bolt is extended to the right, as viewed in FIG. 2, so that the bolt may be retracted by engagement with the striker plate upon closing of the door to which the lock is mounted without moving the trigger member T.

The bolt actuating trigger T is a relatively narrow member and is rotatably supported on the pintle or pivot pin 76 which extends through an aperture therein. The abutment surface 82 is on the front or forward end of the trigger member and the construction is such that as the handle member is rotated in a clockwise direction, as viewed in FIG. 2, the flange 80 thereof, because of its engagement with the abutment 82 on the trigger member, rotates the trigger member in a clockwise direction about the pintle pin 76 and retracts the bolt F.

The bolt actuating trigger T is a substantial member but is relatively narrow referring to the distance or the length of the pintle pin 76 between the flanges 72, 74 of the handle member and is prevented from moving axially along the pintle pin 76 by engagement of the sides thereof with the sides of the slot 10 in the wall part 12 of the mounting member through which slot the blade part 86 of the trigger member extends at all times. The right-hand end of the slot 10 preferably limits movement of the trigger member about the pintle pin 76 in a counterclockwise direction, as viewed in FIG. 2, and upon extension of the bolt under the bias of the spring G the abutting surface 82 by its engagement with the flange 80 rotates the handle H in a counterclockwise direction about the pintle pin 76. The

spring G thus maintains the handle member H in its closed position, shown in the drawings, with its side walls or flanges 72, 74 engaging a ridge 88 in the part 12 and with the upper surface of the part 70 flush with the flange part 20 of the mounting member D. The handle member H opposite the pivot pin 76 has a part 90 extending to the left beyond the side walls 72, 74 formed by an extension of the part 70 reversely bent to provide an underlying surface 98 engageable by the fingers of an operator for the manual operation of the handle.

The door latch A includes a key-operated lock L which comprises a lock mounting cylinder 100 of non-circular shape mounted in a non-circular aperture in the rear wall part 26 forming the bottom of the shallow part 24 of the recess in the mounting member D. The configurations of the lock cylinder and the aperture in the mounting are such that the lock cylinder will not rotate in the mounting member. The cylinder 100 is retained in the member D by a nut 102 threaded onto the cylinder. The cylinder 100 supports a key-actuatable and rotatable lock component or member in the inner end of which a cam member 104 is connected by a screw 106. Alternatively a cylinder 100 may be unthreaded and provided with grooves on two opposite sides into which a U-shaped clip member can be engaged at the rear or underside of the bottom wall part 26 to secure the cylinder in the mounting member and the cam member 104 can be welded or riveted to the key rotatable lock component. This construction makes it more difficult to remove the key-controlled lock L from the mounting member without removing the mounting member from a door to which it may be applied.

The projecting end of the cam member 104 can be selectively rotated by use of a key into and out of the path of a flange part 110 of a member 112 slidably supported in the bolting house E between the bolt therein and the adjacent side of the bottom wall part 12 of the mounting member. The part 110 is at one end of the member 112 and at its opposite end there is an oppositely projecting flange 114 which extends upwardly through the slot 10 in the mounting member and is in the path of movement of the trigger member T. The construction is such that when the cam 104 is in the path of movement of the member 112 the trigger member cannot be rotated in a clockwise direction as viewed in FIG. 2 to retract the bolt F into the bolt housing. It will also be apparent that under these conditions the handle H cannot be rotated. The slot 14 in the bolt F, however, is of sufficient length to permit retraction of the bolt when it engages the striker plate 16. When the cam 104 is rotated to a position clear of the member 112 the bolt can be retracted by rotation of the handle H.

The level of the bottom or back wall part 26 of the mounting member B is such that the lock L is located entirely behind or below the flange part 20 of the mounting member, but close enough to the top of the recess R so as to be readily accessible to an operator.

The size and strength of the respective parts are such that if the handle H is forceably moved in a clockwise direction, as viewed in FIG. 2, with the cam of the key control L preventing retraction of the slide member 112, the pintle pin 76 will bend thus making it impossible to force the lock, that is, retract the bolt, and open a door to which the latch is connected when the door is locked without use of a key. In the embodiment shown the width of the trigger member T, as viewed in FIG. 3, is about one-tenth that of the distance between the side walls 30, 32 of the mounting member D and the slot 10 in the mounting member is only slightly wider than the trigger member, but it is to be understood that a trigger member of different width may be employed provided it does not interfere materially with the bending of the pintle pin upon the handle being forced. Preferably the width of the trigger member is not greater than about one-half the distance between the side walls 30, 32.

The construction of the lock or latch is such that it can be readily mounted in right or left-hand doors or similar structure and be wholly flush therewith, that is, with none of the operating parts of the lock protruding forwardly of the mounting member. The key control L is also such that it does not protrude to the rear or bottom of the lock proper.

One of the important features of the present invention is the fact that the door to which the lock is attached can be unlocked by an authorized person using a key and opened for access to the interior of the compartment served by the door and the handle relocked in its normal rest position before the door is closed. When the door is subsequently closed the bolt will retract by engagement with the striker plate and upon the door reaching the closed position access to the interior can not be had without reuse of the key. Another important features is the fact that the lock cannot be forced to gain access to the compartment.

From the foregoing disclosure it will be apparent that the objects of the invention heretofore enumerated and others have been accomplished and that there has been provided a novel and improved key-controlled door lock particularly adaptable for use on doors of industrial-type cabinets and the like, such as tool compartments of utility trucks, which lock can be mounted entirely flush with a door and will permit the closing of the door with the key control in locked position to prevent reopening thereof without the use of a key.

While the preferred embodiment of the invention has been shown and described in considerable detail it will be apparent that the invention is not limited to the particular construction shown and it is the intention to hereby cover all adaptations, modifications and uses thereof which come within the practice of those skilled in the art to which the invention relates, and the scope of the appended claims.

Having thus described my invention, what I claim is:

1. A flush mountable paddle-type lock of the character described comprising: a sheet metal mounting member provided with a recess opening into the front side having a bottom wall part having an elongated narrow slot therein, a bolt slidably supported by said mounting member and having an end portion normally projecting therefrom and a slot aligned with said slot in said bottom wall part, spring means biasing said slide bolt to a projected position with respect to said recess, a sheet metal paddle-type handle member in said recess and having a relatively planar front part normally flush with the front of said mounting member and conforming generally with the shape of a portion of said recess in said mounting member, means pivotally connecting said handle member to said mounting member adjacent to the side at which said slide bolt projects, a metal trigger member operatively connected to said handle member and comprising a blade part projecting through said slot in said bottom wall part of said mounting member and into said slot in said slide bolt, a member movably supported adjacent to said bottom wall part and having a part movable into the path of movement of said trigger member, a key control lock mounted in said bottom wall part of said recess to one side of said handle member, and a cam carried by said key control lock selectively movable into and out of the path of movement of said member.

2. A flush mountable paddle-type lock of the character described comprising: a sheet metal mounting member provided with a recess opening into the front side including first and second portions of different depth having first and second bottom wall parts, said second bottom wall part being spaced further from the front side of the mounting member than the said first bottom wall part and having an elongated narrow slot adjacent to a side of the recess spaced from said first bottom wall part, a bolt slidably supported by said mounting member and having an end portion normally projecting therefrom and a slot aligned with said slot in said second bottom wall part, spring means biasing said slide bolt to a projected position with respect to said recess, a sheet metal paddle-type handle member in said recess and having a relatively planar front part normally flush with the front of said mounting member and conforming generally with the shape of the deeper of said portions of said recess in said mounting member, means pivotally connecting said handle member to said mounting member adjacent to the side at which said slide bolt projects, a metal trigger member operatively connected to said handle member and comprising a blade part projecting through said slot in said second bottom wall part of said mounting member and

into said slot in said slide bolt, a member movably supported adjacent to said second bottom wall part and having a part movable into the path of movement of said trigger member, a key control lock mounted in said first bottom wall part of said recess in said mounting member, and a cam carried by said key control lock selectively movable into and out of the path of movement of said member.

3. A flush mountable paddle-type lock of the character described comprising: a sheet metal mounting member provided with a recess opening into the front side including first and second portions of different depth having first and second bottom wall parts, said second bottom wall part being spaced further from the front side of the mounting member than said first bottom wall part and having an elongated narrow slot adjacent to the end thereof spaced from said first bottom wall part, a bolt slidably supported by said mounting member and having an end portion normally projecting therefrom and a slot aligned with said slot in said second bottom wall part, spring means biasing said slide bolt to a projected position with respect to said recess, a sheet metal paddle-type handle member in said recess and having a relatively planar front part normally flush with the front of said mounting member and conforming generally with the shape of the deeper of said portions of said recess in said mounting member, a pivot pin beneath said planar front part of said handle member pivotally connecting said handle member to said mounting member adjacent to the side at which said slide bolt projects, a metal trigger member operatively connected to said handle member and comprising a blade part projecting through said slot in said second bottom wall part of said mounting member and into said slot in said slide bolt, a member movably supported adjacent to said second bottom wall part and having one end movable into the path of movement of said trigger member, a key control lock mounted in said first bottom wall part of said recess in said mounting member, and a cam carried by said key control lock selectively movable into and out of the path of movement of said member.

4. A flush mountable paddle-type lock of the character described comprising: a planar sheet metal mounting member having a generally rectangularly shaped recess opening into the front side the opposite end portions of which recess are of

different depth, said recess being formed in part by two spaced parallel side wall parts connected by end wall parts and a first planar bottom wall part and a second planar bottom wall part spaced further from the front side of the mounting member than the first bottom wall part, said second bottom wall part having an elongated narrow slot adjacent to the end thereof spaced from said first bottom wall part and located midway between and parallel with said side wall parts of said recess, a channel-like sheet metal bolt housing secured to the rear side of said second bottom wall part, a bolt slidably supported in said bolt housing and having an end portion normally projecting therefrom and a slot aligned with said slot in said second bottom wall part of said mounting member, spring means biasing said slide bolt to a projected position with respect to said bolt housing, a sheet metal paddle-type handle member in said recess in said mounting member and having a relatively planar front part normally flush with the front of said mounting member and conforming generally with the shape of the deeper of said portions of said recess in said mounting member and having spaced parallel flange parts located adjacent to and parallel with said side wall parts of said mounting member and an end flange part adjacent to said end wall part of said mounting member at the deeper portion of said recess, a pivot pin beneath said planar front part of said handle member spaced a short distance from said end wall part of said mounting member at the deeper portion of said recess and extending through said parallel side wall parts of said mounting member and said flange parts of said handle member pivotally connecting said handle member to said mounting member adjacent to the end thereof at which said slide bolt projects, a metal trigger member carried by said pivot pin and comprising a blade part projecting through said slot in said second bottom wall part of said mounting member and into said slot in said slide bolt and an abutment spaced from said pivot pin engageable by said end flange part of said handle member, a member slidably supported adjacent to said second bottom wall part and having one end movable into the path of movement of said trigger member, a key control lock mounted in said first bottom wall part of said recess in said mounting member, and a cam carried by said key control lock selectively movable into and out of the path of movement of said member.

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