Nov. 8, 1966 D. A. MEES 3,283,549

FLUSH LOCK

Filed Aug. 14, 1964 2 Sheets-Sheet 1

FIG. 1

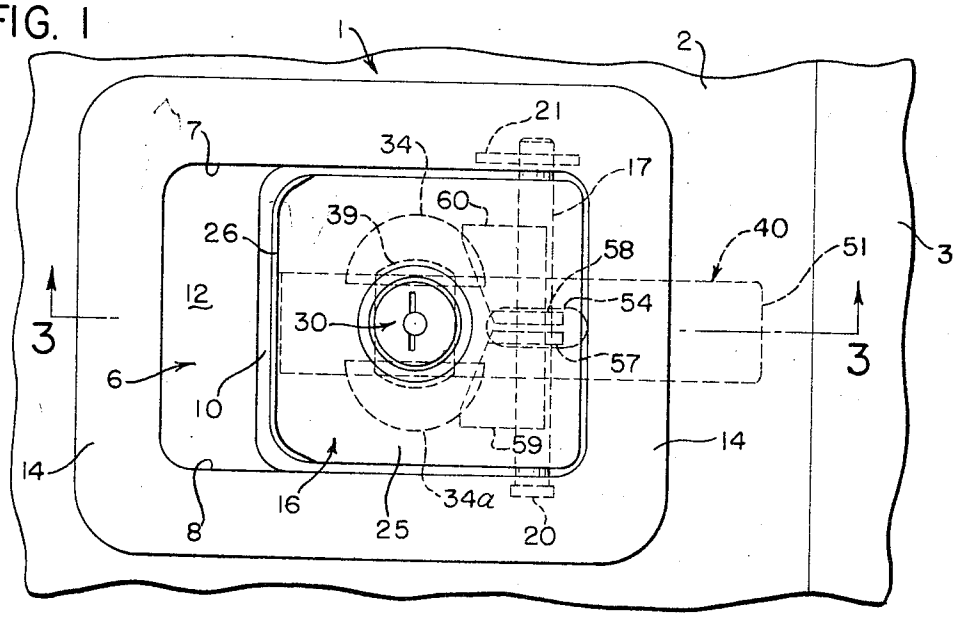


FIG. 2

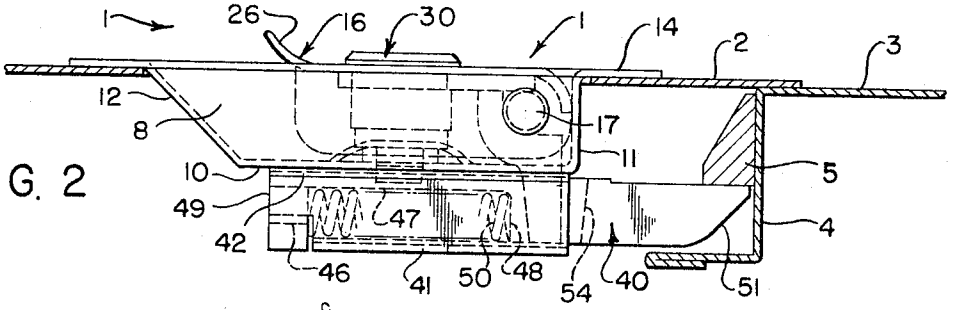
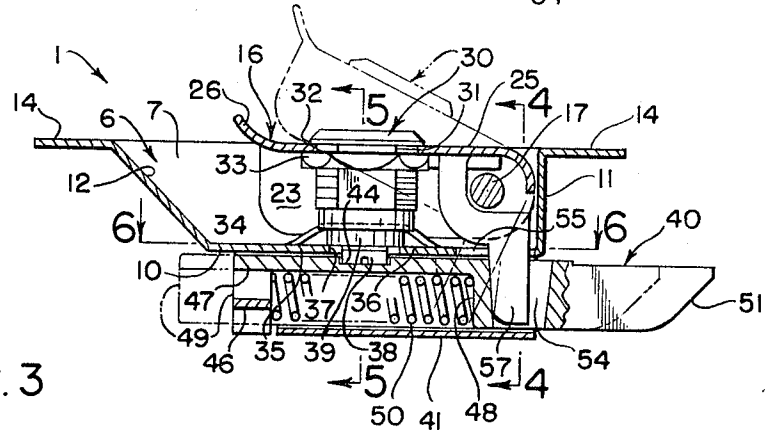


FIG. 3



INVENTOR.
DONALD A. MEES

BY

Fay & Fay

ATTORNEYS

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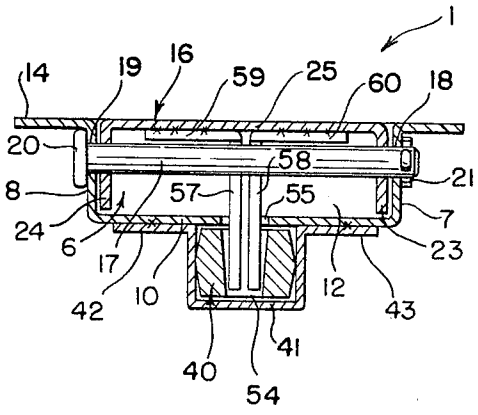

FIG. 4

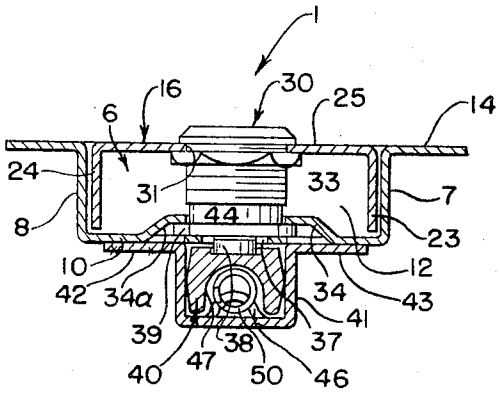

FIG. 5

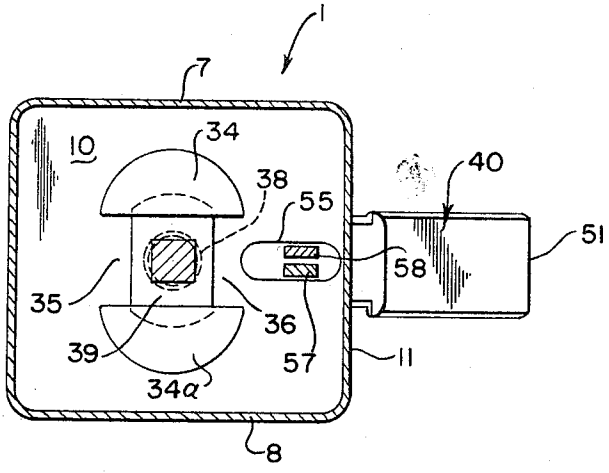

FIG. 6

INVENTOR.
DONALD A. MEES

BY

Fay & Fay

ATTORNEYS

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FLUSH LOCK

Donald A. Mees, Cleveland Heights, Ohio, assignor to H. K. Porter Company, Inc., Cleveland, Ohio, a corporation of Delaware

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1 Claim. (Cl. 70—146)

This invention relates to an improved flush lock for doors. It is adapted particularly for use in connection with the doors of truck bodies and trailers and the prevention of pilferage therefrom.

The improved flush lock of the invention comprises broadly a case having an outwardly opening cavity and a flush mounted flange on the outer edge of the cavity in substantially the same plane as that of the outer door surface. A handle is pivotally mounted between opposite sides of the cavity for actuation of a bolt with the major portion of the handle normally within the confines of the cavity. A keylock extends through the handle and beyond the base portion of the cavity between the opposite sides for selective movement of a locking member into locking engagement with the base portion to prevent pivotal movement of the handle. A spring urged bolt having a recess normally in register with a portion of the keylock is mounted in a housing defined by a channel member which is mounted on the side of the base opposite the cavity. The bolt recess receives the end of the keylock extending beyond the base portion such that a positive retaining of the bolt is accomplished when the locking member is in locking engagement with the base portion.

The improved flush lock of the invention with its novel keylock arrangement is designed such that an attractive and compact unit is now possible which can use commercially available plug locks for mounting in the handle. In addition to this feature, it has been possible to provide a positive relationship between the movement of the handle and the bolt to positively indicate at all times the locked or unlocked condition of the flush lock. Moreover, the bolt is directly retained in locked position by means of the handle mounted keylock. All of this, of course, has been provided while reducing the number of parts and simplifying the manufacturing operations required with a resulting decrease in the cost of an improved lock.

Accordingly, it is an object of the invention to provide a compact improved flush lock having a keylock located symmetrically in the handle to provide a positive lock engagement with both the lock case structure and the bolt.

It is an additional object of the invention to provide an improved flush lock which is inexpensively made of formed sheet metal parts and a forged metal bolt which resists prying or jimmying by thieves because of a novel manner of direct bolt and lock engagement.

Other and more specific objects of the invention will be apparent from the detailed description to follow.

In the drawings:

FIG. 1 is a front elevational view of an improved flush lock constructed according to the principles of this invention, appropriately mounted as, for instance, on a metal truck body door.

FIG. 2 is a side view of the lock of FIG. 1.

FIG. 3 is a cross sectional view taken along the line 3—3 of FIG. 1 with certain of the parts shown in full for clarity. In addition, the figure shows the handle dotted in in the unlocked position.

FIG. 4 is view taken along the line 4—4 of FIG. 3.

FIG. 5 is a view taken along the line 5—5 of FIG. 3.

FIG. 6 is a view taken along the line 6—6 of FIG. 3.

In the embodiment illustrated, the numeral 1 generally designates the improved flush lock of this invention. The lock is mounted in a door 2 which is hingedly or otherwise associated with a truck body 3 having a door opening defined by a frame member 4 with a striker member 5 mounted thereon.

The improved flush lock 1 has a case which defines an outwardly opening cavity 6 by means of opposite side walls 7 and 8 which are generally parallel to one another and which have disposed between them a cavity base 10. The base 10 is defined at one end by a wall 11 that is transverse to the parallel sides 7 and 8 and at the opposite end by a tapered or angled finger guide 12.

Accordingly, it will be seen that the open faced cavity 6 is defined on its sides by the walls 7 and 8, on its ends by the wall 11 and the finger guide 12, with all the walls and the finger guide merging in a base 10.

The outer edge of the case cavity 6 has an integral flange 14 around its perimeter which overlaps the structure if the door 2 as shown in FIGS. 1 and 2 to provide ease of mounting and to eliminate tampering with the lock mechanism such as might permit unauthorized opening of the door 2.

An operating handle 16 for the improved flush lock 1 is provided in the cavity 6 for manual operation of the lock and door to indicate a locked or unlocked condition. The handle 16 is pivotally mounted on a pivot pin 17 which extends through suitable registered apertures 18 and 19 in the cavity side walls 7 and 8. The pivot pin 17 is headed as at 20 and has a cotter pin or other conventional type of retainer 21 to hold it against axial movement in the assembled position. The handle 16 is generally U-shaped with parallel ears 23 and 24 spaced slightly inwardly from the walls 7 and 8 respectively. A finger engaging bridging portion 25 defines the handle portion between the ears such that most of the handle 16 normally lies within the confines of the cavity with the finger-gripping portion 25 substantially flush with the case flange 14. On the end of the bridging member 25 opposite to the location of the pin 17 and cavity end wall 11 is a slightly outturned portion 26 which together with the tapered finger guide 12 defines an opening through which the operator's fingers may be inserted to grasp the handle 16 and pivot it about the pin 17 to open the door.

The opening of the door by pivoting of the handle can be prevented by means of a keylock 30 provided in symmetrical manner on the flush portion or bridging portion 25 of the handle 16 in such a manner that it extends through an opening 31 in the back 25 of the handle 16 and is held there by means of a flange 32 and a lock nut 33 in a manner well known to those familiar with conventional plug locks.

The lock structure 30 extends across the cavity 6 to a central area of the base 10 between the opposite sides 7 and 8. This central area of the base 10 is divided into two symmetrically arranged parts 34 and 34*a*, which are deformed so as to project into the cavity 6. The parts 34 and 34*a* are separated by a pair of tongues 35 and 36. These tongues are small portions of the base portion 10 and together they define an opening 37 through and beyond which the inwardmost end 38 of the lock 30 extends. Spaced slightly inwardly toward the cavity 6 from the end 38 of the lock 30 is a locking member 39. The locking member is arranged for engagement by rotation with the surfaces of the base portions 34 and 34*a* opposite the cavity 6 to establish a locked condition. The dimensions of the locking member 39 correspond to those of the space between portions 34 and 34*a* such that the lock 30 may be rotated to permit the locking member 39 to establish an

unlocked condition in which it can pass into the cavity 6 past the portions 34 and 34*a* when the handle 16 is pivoted.

A bolt 40, preferably of forged metal, is mounted on the side of the base 10 opposite cavity 6 in register with the opening 37 within a housing defined by a channel member 41. The channel member 41 has flanges 42 and 43 which are welded or otherwise suitably secured to the base 10. The bolt 40 has a recess or opening 44 in the side adjacent the base 10. Recess 44 is of suitable shape to receive the inwardmost end 38 of the lock 30 and to permit passage of the end 38 into and out of the recess 44 when the handle 16 is pivoted into and out of the cavity 6.

The channel member 41 is provided with an inwardly deformed portion 46 at one end thereof which extends into the housing defined thereby. The forged bolt 40 has an elongated passageway 47 which accommodates the portion 46. A shoulder or stop surface 48 transverse to the bolt defines one end of the bolt passageway 47. At the opposite end 49 of the bolt the passageway 47 is open to receive the deformed portion 46. As may be seen in the drawings, the channel member 41 and the passageway 47 in the forged bolt define a cavity which varies in size with reciprocation of the bolt because of relative movement between shoulder 48 at one end and the deformed portion 46 at the other end. A coil spring 50 is located in the thus defined variably sized cavity to urge the bolt forwardly or in the direction of the striker plate 5. The bolt 40, has a tapered nose 51 for camming against the striker plate 5 during closing of the door.

Between the nose or camming surface 51 and the shoulder 48 in the bolt 40 is an aperture 54 having slightly tapered side walls. The aperture 54 is in register with a slot or aperture 55 in the base wall 10 which is of slightly elongated shape with its ends located at substantially equal distances from the axis of the pin 17 which is perpendicular to it.

The purpose of the apertures 54 and 55 is to permit access of two operating arms 57 and 58 to the bolt 40 for driving engagement therewith. The operating arms 57 and 58 are secured to the handle 16 by welding or other suitable means. Turned-over flanges 59 and 60 respectively are provided at their outermost ends for this purpose. As the handle 16 pivots about the pin 17, the operating arms 57 and 58 move in a slight arc within the aperture 54 and slot 55, and because of the relative dimensions of these parts, a positive corresponding movement of the bolt 40 occurs. For instance, as will be seen in FIG. 3 when the handle 16 is moved to the position shown dotted in, the operating arms pivot in clockwise direction about the pin 17 to drive the bolt 40 against the force of the coil spring 50 to retract it in a direction away from the striker plate 5.

In a similar manner, the spring 50 normally acts to force the bolt 40 in a direction toward the striker plate 5 and, therefore, the operating arms 57 and 58 move forwardly to create normal counterclockwise force on the pivoted handle 16 (as seen in FIG. 3) which will insure that it is normally in the flush position and that it does not project out of the cavity in a manner which could create a safety problem to persons or vehicles coming in close proximity thereto.

An important dimensional relationship between the various parts permit the keylock end 38 to be removed from the bolt recess 44 during pivoting of the handle 16 out of the flush position. The arcuate path of the keylock end 38 about the pin 17 indicates the dimensions of the recess 44 and opening 37 in that sufficient clearance for passage must be provided without the opening 37 being so large as to weaken the structure of the base 10, or the recess 44 being so large as to permit movement of the end of bolt 40 from behind striker 5 without corresponding pivotal movement of the handle 16.

For ease of description, the principles of the invention have been set forth in connection with but a single illustrated embodiment showing a preferred form of the flush lock. It is not my intention that the illustrated embodiment nor the terminology employed in describing it be limiting inasmuch as variations in these may be made without departing from the spirit of the invention. Rather, I desire to be restricted only by the scope of the appended claim.

I claim:

An improved flush lock comprising a case having an outwardly opening cavity, and a base portion having a deformed area therein which projects inwardly into said cavity, a handle pivotally mounted between opposite sides of said cavity for actuation of a bolt with the major portion of said handle normally within the confines of said cavity, a keylock extending through said handle and beyond said deformed area of said base portion of said cavity between said opposite sides, said deformed area of said base portion of said cavity projecting inwardly into said cavity, a locking member disposed inwardly of the remaining portion of said base in engagement with said deformed area of said base portion on the side of said base portion opposite said cavity, a bolt mounted on said case for reciprocal movement, an opening in said bolt for receiving a portion of said locking member which extends beyond said deformed area of said base portion and said remaining portion of said base when said locking member is in locking engagement with said deformed area of said base portion, said opening being dimensioned to permit the portion of said locking member which extends beyond said remaining portion of said base to be removed from said opening during pivoting of said handle, and means mechanically engaging said bolt and said handle for positive movement of one in response to movement of the other.

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BOBBY R. GAY, *Primary Examiner.*