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DOOR LATCH

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Fig. 1.

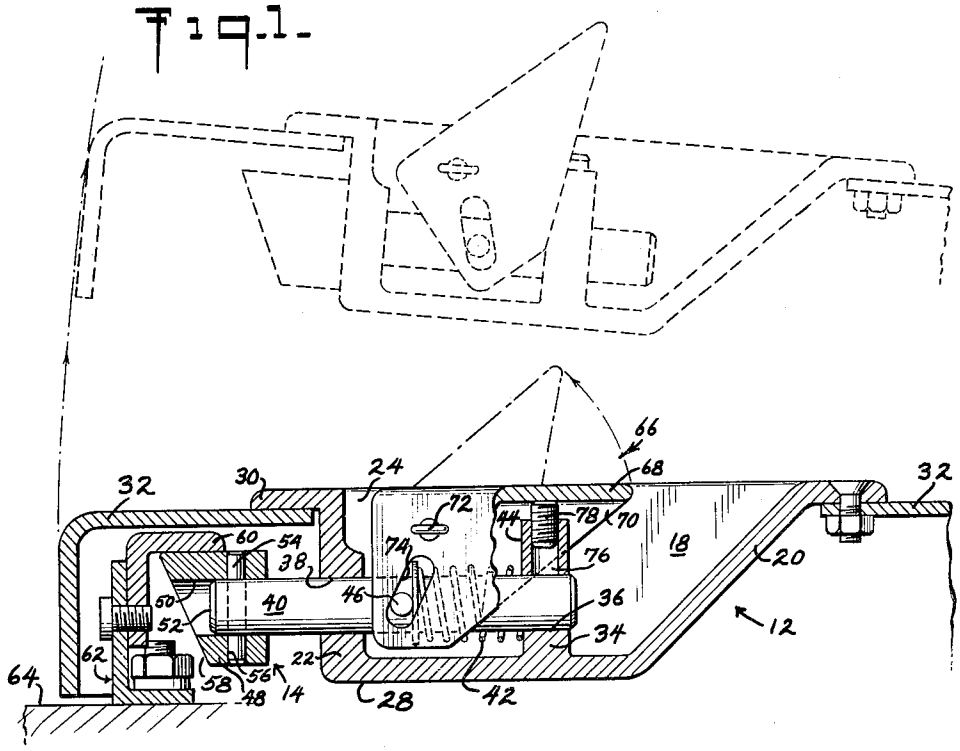
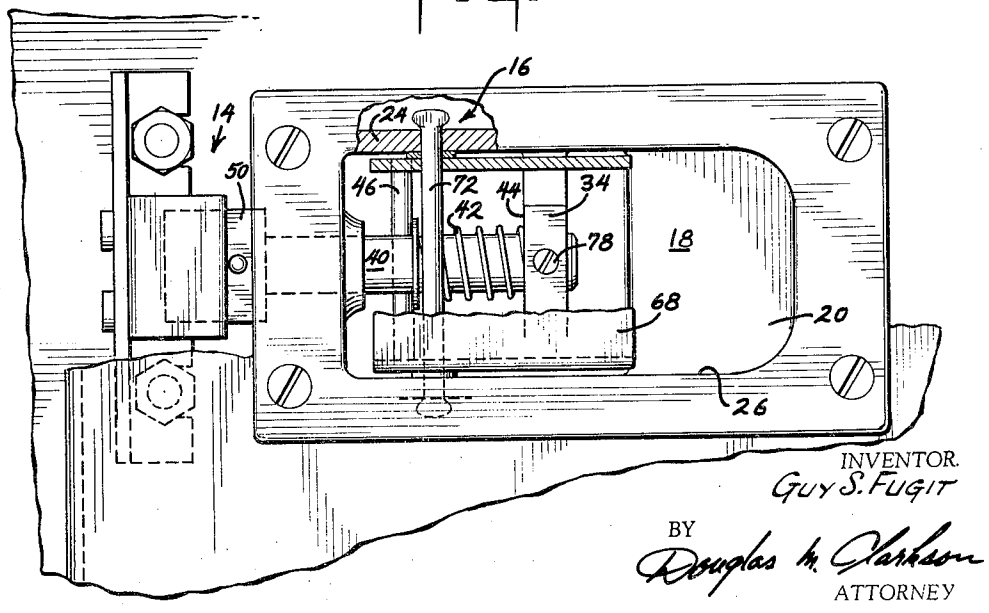


Fig. 2.



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DOOR LATCH

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This invention relates to a cabinet door latch, and in particular, to a latch assembly or unit suitable for flush or recessed mounting in a door.

To avoid the need for lubrication of moving parts of door latches and to prevent malfunctioning of the latch, these moving parts are often provided with liberal tolerances. Upon assembly of parts with such tolerances, handles may not achieve the desired flush position, and other parts may result in a malfunction of the latch assembly. The correct handle position is particularly important in latch assemblies for flush mounting in a door where the appearance of the assembly is affected adversely by protrusion of components of the assembly above the surface of the door. Moreover, parts projecting above the surface of the door can cause personal injury.

Accordingly, it is an object of the invention to provide an improved door latch assembly whereby adjustment of moveable components can be effected after installation in a door to arrange surface portions of the assembly flush with the door and to present a safe and attractive arrangement.

It is a further object of the invention to provide an inexpensive, easily installed, flush mounted, door latch assembly which can be adjusted after installation for optimum functioning of the latch.

These and other advantages are accomplished in accordance with the invention by providing in a latch assembly, the combination including a housing having walls defining a recess, means for mounting the housing in a door whereby surfaces of the housing are substantially flush with the door, a latch-bolt including a shank, guide means in the housing engaging the shank for longitudinal movement within the housing, means biasing the shank to a normally closed position, and actuating means operatively connected to the shank to effect said longitudinal movement, said actuating means being pivotally mounted in the housing and having a flat-surface, finger-lift portion arranged to partially cover the recess and to be approximately co-planar relative to the above-mentioned housing surfaces and the door when the latch bolt shank is so biased.

Further provided in accordance with the invention is a stop mechanism mounted in the housing adapted to engage the finger-lift portion, the stop mechanism being adjustable to effect said co-planar relationship. It will become apparent that the stop mechanism also effects an adjustment of the moving components of the assembly for optimum functioning of the assembly.

The invention and other advantages thereof will become more apparent upon consideration of the following specification and accompanying drawings, in which:

FIG. 1 is an elevation, section view of a latch assembly in a closed position in accordance with the invention, showing in phantom lines the assembly in open position; and

FIG. 2 is a plan view of the latch assembly of FIG. 1 with portions cut away.

Referring to the drawings, the latch construction includes a housing mechanism broadly designated by the numeral 12 and a catch mechanism broadly designated by the numeral 14. The housing mechanism 12 is generally rectangular and cup-shaped in appearance and has a recess 18 defined by a sloping rear wall 20, upstanding front and side walls 22, 24 and 26, and an inner wall 28.

The front, rear and side walls are provided along their outer or free surfaces with a peripherally extending flange 30 arranged to be secured to a door panel 32 so that free surfaces of components of the housing are approximately flush with the surface of the door panel. Also constituting part of the housing mechanism 12 is an upstanding intermediate wall 34 parallel to the front wall 22. The intermediate wall 34 is disposed approximately halfway between the front wall 22 and the rear wall 20 so that it extends across the recess 18 between the side walls 24 and 26.

The intermediate wall 34 and the front wall 22 are provided with aligned apertures 36 and 38 in which a latch-bolt shank 40 of the catch mechanism 14 is guided slidably, the bolt being biased in a forward direction, towards the illustrated latching or closed position, by a helical coil spring 42. The spring 42 is compressed between a front surface 44 of the intermediate wall 34 and a pin 46, the latter projecting through the bolt shank 40 in a direction transverse to the axis of the bolt shank.

The latch mechanism 14 also includes a head 48 having a bore 50 the surfaec of which engages the free or forward end 52 of the bolt shank 40. The head 48 is secured to the bolt shank 40 by a locking pin 54 seated in a slot 56 extending through the head 48 and the bolt shank 40, and the head 48 is provided with an inclined forward surface 58 to cam the bolt shank 40 to a retracted position as the door swings from the open position shown in phantom lines to the closed position shown in solid lines.

This camming action is against an outstanding arm 60 of a keeper assembly 62 secured to a surface 64 of the cabinet. The upper flat surface of the bolt head 48 engages the underside of the outstanding arm 60 to lock the door in place.

To retract the bolt shank to its rearmost position for opening the door, the assembly is provided with a finger-lift mechanism 66 consisting of an actuating handle 68 in the form of a flat plate-like surface having downwardly extending lateral arms 70. The mechanism is mounted within the housing recess 18 by a pintle 72 extending between the side walls of the housing and through the arms 70.

The point of pivot of the handle 68 and location of the pintle 72, when the latch assembly 14 is in its closed or locked position, is slightly above and to the rear of the spring engaging pin 46. The pin 46 in addition to engaging the helical coil spring, also operatively engages the downwardly extending arms of the finger-lift assembly 66, in aligned slots 74, such that on lifting the handle 68, the bolt shank 40 is forced in a rearward direction compressing the helical coil spring 42 and withdrawing the bolt head 48 from the keeper assembly 62 permitting opening of the door.

Because of tolerances required in manufacturing, to reduce manufacturing costs and to avoid the need for lubrication, the latch assembly 14 in its closed and biased position may have component parts which are slightly disarranged presenting possibly an objectionable appearance, or projecting surfaces which may cause personal injury. In particular, liberal tolerances must be provided between the slot 74 and the pin 46.

To avoid disarrangement, the upstanding intermediate wall 34 of the housing 12 is provided with an upwardly extending threaded socket 76 into which a stop member 78 is turned, the handle 68 of the finger-lift assembly being in contact with the stop member when the bolt shank is in its biased, closed position. By adjusting the stop member to a set distance from the bottom wall 28 of the housing 12, the location of the surface 68 of the finger-lift assembly can be set so that it is maintained flush

with and co-planar with the surface of the door and with the free surfaces of the housing.

In a preferred embodiment of the invention, the screw stop member is made of nylon or a similar plastic material designed to absorb the shock of the finger-lift assembly when it is snapped to its normal position by spring 42, avoiding objectionable noise and possible fatigue to components of the assembly.

Although the invention has been described with reference to specific embodiments, variations within the spirit and scope of the inventon as defined in the following claims will be apparent to those skilled in the art.

What is claimed is:

1. In a latch assembly, the combination comprising,
a housing having walls defining a recess,
a latch bolt including an elongated shank portion,
guide means in the housing arranged to engage said shank portion for longitudinal movement within said housing recess,
actuating means operatively connected to said shank portion to effect said longitudinal movement,
portions of said actuating means being designed to be co-planar with surfaces of said housing when the latch assembly is in its normal closed position, and
adjustable stop means seated in said housing arranged to contact said actuating means to effect said co-planar relationship.

2. In a latch assembly, the combination comprising,
a housing having walls defining a recess,
means for mounting said housing in a door so that outer surfaces of the housing are approximately flush with the outer surface of the door,
a latch bolt including an elongated shank portion,
guide means in the housing arranged to engage said shank portion for longitudinal movement within the housing recess,
actuating means operatively connected to said shank portion to effect said longitudinal movement,
said actuating means being mounted in said housing for pivotal movement and including an outer surface designed to be co-planar with said housing outer surfaces when the latch assembly is in its normal closed position, and
said housing further including adjustable stop means in contact with said actuating means outer surface to effect said designed co-planar relationship.

3. In a latch assembly according to claim 2 wherein said housing includes front and rear walls and side walls defining a recess and a wall intermediate said front and rear walls extending between said side walls, said guide means comprising aligned apertures in said intermediate and front walls, said stop means being adjustably seated in said intermediate wall to contact said actuating means outer surface.

4. In a latch assembly according to claim 2 wherein said stop means is made of a plastic material capable of absorbing shock.

5. In a latch assembly, the combination comprising,
a housing having walls defining a recess,
a latch bolt including an elongated shank portion,
guide means in the housing arranged to engage said shank portion for longitudinal movement within the housing recess,
actuating means pivotally mounted in the housing including an outer surface portion designed to be co-planar with surfaces of the housing when the latch assembly is in its normally closed position,

lateral arm portions operatively connected through aligned slots to the latch bolt shank portion to effect said longitudinal movement on pivoting of the actuating means, and
said housing further including stop means mounted in the housing to contact said actuating means adjustable to effect said co-planar relationship.

6. In a latch assembly, the combination comprising,
a housing having a front and side walls defining a recess and an intermediate wall extending across the recess between the side walls,
aligned apertures in said front and intermediate walls,
a latch bolt including an elongated shank portion slidable in said apertures,
means normally biasing said shank portion to a closed position in the direction of said front wall,
actuating means pivotally mounted in the housing including an outer surface portion designed to be co-planar with surfaces of the housing when the latch assembly is in its closed biased position and lateral arm portions operatively engaging said latch bolt shank portion, and
adjustable stop means mounted on said intermediate wall arranged to contact said actuating means when pivoted by operation of said spring means to position said actuating means surface portion in said co-planar relationship.

7. In a latch assembly according to claim 6 wherein said shank portion includes a transverse pin extending through the shank portion in the area between the front and intermediate walls, said biasing means comprising a helical coil spring compressed between said intermediate wall and said pin, the actuating means further including means defining aligned slots in said arm portions through which said transverse pin extends.

8. In a latch assembly, the combination comprising,
a housing,
a latch bolt including an elongated shank portion,
guide means in the housing arranged to slidably engage said shank portion for longitudinal movement thereof,
actuating means pivotally mounted in the housing comprising an outer surface portion arranged when in a closed position to be co-planar with surfaces of the housing,
lateral arm portions having aligned slots operatively engaging said shank portion to effect said longitudinal movement, said slots having a generous clearance,
stop means in said housing against which said actuating means surface portion is pivoted, and
said stop means being adjustable to effect said co-planar relationship.

9. In a latch assembly according to claim 8 wherein said stop means is made of a plastic material to absorb shock.

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