

June 25, 1963

R. T. CASEBOLT

3,095,227

REVERSE LATCHING ASSEMBLY FOR SLIDING DOOR

Filed Nov. 10, 1960

FIG. 1

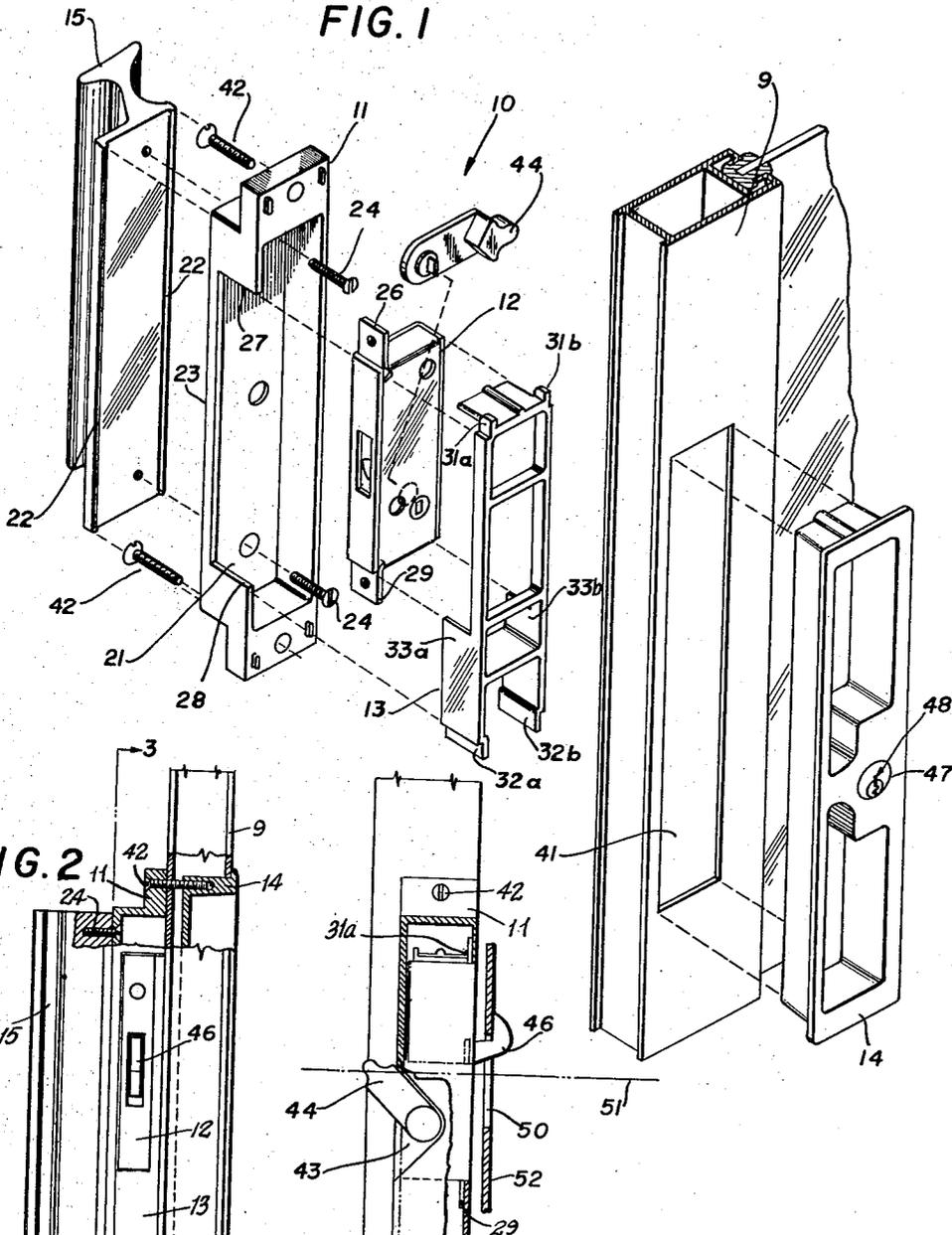


FIG. 3

INVENTOR.  
RALPH T. CASEBOLT  
BY  
*Townsend and Townsend*  
ATTORNEYS

1

3,095,227  
**REVERSE LATCHING ASSEMBLY FOR  
SLIDING DOOR**

Ralph T. Casebolt, 1610 E. 12th St., Oakland, Calif.  
Filed Nov. 10, 1960, Ser. No. 68,490  
5 Claims. (Cl. 292-244)

This invention relates to latching assemblies and more particularly to reversible latching assemblies designed to cooperate with sliding glass doors independently of the direction of movement of a door to its closed position.

The versatility of sliding door assemblies in the building trades is largely dependent upon their adaptability to a variety of construction situations. In spite of the fact that sliding doors, particularly the so-called lanai doors, have become increasingly popular to the extent that distributors can economically justify carrying different sizes in stock, one way to reduce the necessary inventories is to provide hardware that can be used on doors that slide to a closed position at the left or right side of the frame.

In order to design versatile sliding door assemblies, the present effort has developed a sliding door assembly in which the door jamb and other side member may be reversed, depending upon the direction in which the door is to close, and which incorporates a number of other features designed to facilitate the use of a minimum number of basic components. In furtherance of this object of minimizing the stock inventories that need to be carried to provide full sets of hardware for different installations, the present invention envisions a reversible lock assembly for a sliding door which may be inverted to assure always that the door is locked against upward movement as well as movement along the line of slide.

Reversible lock assemblies must be provided for sliding doors due to the way in which such doors are installed and moved in translation on tracks. In the installation of such glass doors it is usual to suspend them from tracks along the under side of the frame header and to guide the bottom of the doors in parallel tracks formed in the door sill. To remove such a door, it is only necessary to lift up on the door to free the bottom of the door from the guiding tracks and transversely pivot the door out of the frame. Thus, if an effective lock is to be provided for such a door, the pivotally supported latch thereof should pivot forwardly (with respect to the door jamb) and upwardly to prevent upward movement of the door when locked against its cooperating door jamb. If the door jamb against which the door is to be locked can be used on either the left or right side of a frame assembly, it is necessary to provide a lock assembly which may be reversed in order to assure an upward locking movement in both cases.

Beyond the desirability of providing a single lock assembly for either right or left hand door pull arrangements, there is some advantage to employing standard locks. Such rectangularly shaped locks are readily available and their use may be facilitated if means are provided to invert them depending upon the direction of closure required in a given installation.

In the present invention, a readily available commercial lock or locking device is employed in a reversible locking assembly to provide an easily installed combination lock and door pull that is appropriate for use irrespective of the direction of door closure. The reversible locking assembly includes a hollow body member, external and internal door pulls, a rectangularly shaped locking device and reversible spacer. The body member, locking device and pulls are symmetrical about a horizontal plane through their center so that all of them may be rotated 180° to provide the two positions necessary for left to right and right to left door closures. In addition to the symmetry of

2

these components, the spacing device is symmetrical about a transverse vertical plane so that the spacer may be rotated 180° to maintain the locking device at the upper end of the body member and interior thereof with the pivotally supported latch of the locking device always rotatable outward and upwardly with respect to the door assembly proper.

The latch of the locking device ordinarily cooperates with the upper edge of a rectangular aperture formed in a transverse surface of the door jamb midway between the sill and header of the frame assembly. Since the locking device must be positioned slightly above center in order to engage the upper edge of the locking aperture, it is necessary to position it in the body member at the upper end.

In order to provide this arrangement the hollow rectangularly shaped body member has a rectangular cut out formed along the forward surface which, when attached to the side of a door stile, faces the transverse surface defining the rectangular aperture. The rectangularly shaped locking device having upper and lower tabs formed adjacent its forward surface is positioned at the upper end of the body member with the upper tab bearing against the inside surface of the body member so that the forward surface thereof lies in a common plane with the forward surface of the body member. The spacing device is formed with pairs of tabs extending from each end and with a filler portion or insert formed on both sides thereof adjacent one pair of tabs. With the locking device in situ as noted, the spacing device is fitted inside the body member over the locking device so that the forwardly disposed one of the upper pair of tabs engages the interior surfaces of the body member adjacent the upper tab on the locking device and the forward one of the lower tabs engages the inner surface at the lower edge of the cut out in the body member with the filler piece lying in the common plane with the forward surfaces of the locking device and body member and providing an engaging surface for the lower tab projecting from the locking device. With the locking device and spacer fitted interior of the body member as described, the body member is affixed to the inside of the door stile and an external flush door pull is inserted in a rectangular aperture in the door stile in overlying position therewith. The lock and exterior pull are held together by screws or other retaining means. An interior door pull fits along the outer surface of the body member and is affixed thereto to provide a convenient interior pull. Apertures are formed in the body member and a V-shaped excision made in the external surface of the body member to permit a manual operator to cooperate with the pivotally supported latch or latching member of the locking device. And finally, a key lock cylinder may be supported in a part of the flush exterior pull to permit the locking device to be locked by a key.

From the foregoing description of the reversible lock assembly of the present invention, it can be seen that the principal object of this invention is to provide a reversible lock assembly which is economical to manufacture, simple to install with a minimum of labor, and which, when locked, prevents a door being opened or removed from its guide channels.

A feature of the invention pertains to a lock assembly affixed to the side of a movable door stile to engage an aperture formed in the door jamb, which assembly includes reversible means for disposing the lock with respect to the upper edge defining the locking aperture so that the latch member of the lock in operation always moves in an upward direction to engage the uppermost edge of the aperture and a filler piece or insert to close the surface of the lock assembly facing the apertured door jamb.

3

Another feature of the invention is a door pull and locking assembly for use with right and left hand sliding doors which locks the door upwardly with respect to the cooperating jamb and combines a locking member affixed along one side of the leading door stile and external and internal pull members disposed along the inside and outside surfaces of the locking member, the locking member comprising a body member having a cut out in the forward part thereof transverse to the line of movement of the door, a lock device including a pivotally supported latch operable by rotation in one direction to engage a cut-out in the door jamb, and a spacing device cooperable with the lock device and the body member to space the lock in a preselected vertical position within the body member whereby the latching member on rotation will move outwardly through the cut out in the body member and upwardly with respect to the orientation of the door to retain the door stile immediately adjacent the apertured door jamb and prevent upward movement of the sliding door with respect thereto.

These and other objects and features of the present invention will be more fully understood when the following detailed description is read with reference to the drawings in which:

FIG. 1 is an exploded perspective of the reversible locking assembly and a portion of a cooperating door stile;

FIG. 2 is a view looking along the line of movement of the door toward the assembled reversible lock assembly and door stile with portions of the assembly cut away to more clearly illustrate certain features of the invention; and

FIG. 3 is a cross section taken along line 3—3 of FIG. 2 with certain portions cut away to more clearly illustrate certain of the features of the invention.

The composite lock assembly 10 includes a hollow body member 11, rectangular locking device 12, a spacing device 13, a recessed exterior door pull 14 and an interior pull 15. As can be particularly observed in FIG. 1, the hollow body member 11 has a rectangular cut-out 21 in the forward surface which faces the transverse door jamb 52 (FIG. 3) to which a sliding glass door is to be locked. The interior door pull 15 has a pair of vertical shoulders 22 formed at its forward and rearward surfaces (with respect to the exemplary movement of the door) which engage the forward and rearward outer edges 23 of the body member 11 to hold the inner pull 15 adjacent the outer surface of body member 11 where it is maintained by screws 24 which thread into the base of pull 15. If the door in closing is to slide from left to right, as viewed from the inside, the exemplary arrangement illustrated in FIGS. 1-3 is employed. In this situation, the locking device 12 is placed interior of the body member 11 with the upper tab 26 abutting the inner surface adjacent the upper edge 27 and with the forward surface of body member 11 and lock 12 lying in a common plane (as illustrated particularly in FIG. 3). The spacing device 13 is formed with upper tabs 31a and 31b, a pair of lower tabs 32a and 32b and filter inserts 33a and 33b on the forward and rear surfaces of the spacing device 13. The forward insert 33a lies in the common plane including the forward surface of body member 11 when tab 31a fits behind edge 27 adjacent top 26 of lock device 12 and tab 32a fits behind the lower horizontal edge 28 defining the cut-out 21. With the spacing device 13 in place inside the body member 11, the lower tab 29 on the locking device 12 bears against the back side of filler insert 33a and the result is a flush forward surface in a common plane, as noted. The locking assembly 10, as assembled, is placed on the inside flat surface of a rectangular door stile 9 overlying a rectangular aperture 41 formed transversely through the door stile as indicated in FIG. 1. The recessed exterior pull 14 is placed through the rectangular aperture 41 from the external side of the door and the body member 11 along with the

4

locking device 12, spacer 13 and inner pull 15 are held in fixed relation thereto by screws 42 or other holding means. As can be seen particularly in FIG. 3, a triangular recess 43 is formed on the outside of the body member 11 and an aperture formed therethrough permits a manual operator 44 to engage the locking device 12 to rotate the locking device latch or latching member 46 between its retracted and extended positions. Provision is also made, by means of a knock-out over aperture 47 in the recessed pull 14, to permit a cylinder 48 to be used so that a key may extend and retract the latch 46.

The foregoing exemplary description applies when the sliding door moves from left to right in closing as viewed from the inside. If the door is to be closed from right to left, the body member 11 is rotated 180° and the locking device 12 is turned over so that the other flat side thereof is placed interior of the body member 11. This maintains it in the upper part of body member 11. With this change in location, the spacing device 13 is placed interior of the body member 11 around the locking device 12 to maintain the filler insert or plate 33b adjacent the lower part of the locking device 12. By this means, the latch 46 of the locking device 12 is again rotatable to an extended position outward and upwardly to provide positive locking against upward movement of the door.

A partial break-away of the latch 46 of the locking device 12 as it cooperates with a transverse surface of a door jamb 52 is illustrated in FIG. 3. The centerline of the door represented by plane 51 lies along the midpoint of the aperture formed in the door jamb 52 and, depending upon whether the jamb 52 is in the position shown in FIG. 3 or turned upside down (rotated 180°), the locking device 12 must be rotated 180° to permit engagement of the upper edge of the aperture 50 by the latch 46. It will also be noted that the alignment of the key or manual actuating means for locking device 12 are maintained at the center of body member 11 irrespective of the rotated position of locking device 12 interior of body 11. As a result, the manual operator 44 and lock cylinder 48 are aligned with the aperture formed in the locking device 12 for actuating device 46 at all times.

The present reverse latching assembly for a sliding door provides a simple and versatile locking assembly easily adapted for door pulls in either direction. By utilizing a minimum of parts, which in most cases contain mirror image duplicates, it has been possible to provide an easily assembled locking assembly which is virtually foolproof and requires nothing more than the conventional skills of an unskilled workman. While the invention has been described with reference to a particular combination employing a particular type of exterior and interior door pull as well as a particularly shaped and pre-fabricated mortise lock, it should be apparent that the basic concepts of the invention may be employed to good effect in cooperation with any readily available lock more or less symmetrically shaped—a characteristic common to most locks. For this reason the invention should not be limited by the specific illustrative locking assembly; various changes can be envisioned by those skilled in the art without departing from the spirit and scope intended for the instant invention.

What is claimed is:

1. In a lock assembly affixed to the side of a door for locking the door against its cooperating door jamb, the combination of a body member supported alongside the leading edge of the door and having a cut out in its leading side, a locking device having a rotatable latch member operable to pivot outwardly away from one end thereof and upwardly, said locking device being symmetrically constructed whereby said one end thereof may be disposed in said body member adjacent the upper end thereof irrespective of direction of movement of the door to a closed position, and a symmetrical reversible spacing member for maintaining said locking device adjacent the desired end of said body member so that the latch mem-

5

ber at all times moves toward the top of the door and jamb to engage retaining means associated with said jamb.

2. In a door pull and locking assembly for use with right and left hand sliding doors and which locks the door upwardly with respect to the cooperating jamb, the combination of a locking member affixed along one side of the leading door stile and external and internal pull members disposed along the inside and outside surfaces of said locking member, said locking member comprising a body member having a cut-out in the part thereof transverse to the line of movement of the door, a lock device including a pivotally supported latch for engaging a cut out in the door jamb by rotation in one direction, and a spacing device cooperable with said lock device and said body member to space said lock device in a pre-selected vertical position within said body member whereby the latch upon rotation will move outwardly through said cut out and upwardly with respect to the door jamb to retain the door stile immediately adjacent a door jamb and prevent upward movement of the sliding door with respect to said door jamb.

3. Means for supporting a symmetrical lock cylinder along the vertical length of a door stile so that the latch thereof always rotates upwardly to lock the door to an adjacent jamb comprising, in combination, a body member affixed along the vertical length of the door stile with an open side facing the door jamb, the door jamb having a rectangular aperture formed along its vertical transverse surface and at the center line distance of the open side of said body member, a locking device having external symmetrical dimensions and pivotally supporting a latch for rotatable movement outwardly thereof toward one of the sides, and symmetrical means including a plate filler to support said locking device interior of said body member so that the latch in rotating to engage a horizontal edge defining said rectangular aperture can be oriented to always move toward the top of the jamb to engage the upper edge of the jamb and the forward surface of said body member which is not occupied by said locking device is covered by said plate filler.

4. A lock and door pull assembly cooperating with a stile of a lanai door and latch retaining means formed in a cooperating door jamb comprising, in combination, a substantially rectangular stile having aligned rectangular apertures formed in the flat surfaces thereof, a substantially rectangular exterior pull proportioned to depend through the rectangular apertures in said door stile and including a flange formed at its outer periphery to abut one surface of said stile adjacent the aperture formed therethrough, a manual lock assembly disposed along the other surface of said stile overlying the rectangular aperture formed therethrough, means for joining the lock assembly and exterior pull to maintain the exterior pull interior of said stile and the lock assembly in immediate juxtaposition thereto and along said other surface of said stile, and an interior pull member supported on the outer side of said lock assembly, said lock assembly comprising

6

a rectangular body member having an opening formed along the side disposed outwardly from said door stile and transverse to the line of movement of said door, a lock device including a latch member pivotally supported for movement outwardly and upwardly, said device supported interior of said body member with the latch member movable outwardly through the open side of said body member and a spacing member cooperating with said lock device and said body member to fixedly retain the lock device in the upper part of said body member in order to accommodate cooperation between said latch member and the latch retaining means formed in the door jamb.

5. In a reversible lock assembly for locking a door stile to its cooperating door jamb through the cooperation of a pivotally supported latching member oriented to engage the upper edge of an aperture formed in the door jamb, the combination of a rectangular hollow body member open on one side, means to attach said body member along said open side to a flat side of the door stile, said body member having a rectangular cut-out in its forward side disposed immediately adjacent the jamb when the stile is closed against the jamb, a reversible rectangular-shaped pre-fabricated lock including a pivotally supported latching member rotatable in one direction to a locking position, means to position said lock in said upper body member, said means comprising tabs projecting from the upper and lower ends of said lock whereby one of said tabs is positioned immediately behind the upper one of the horizontal edges defining the cut-out in said body member so that the forward surface of said lock and of said body member lie in a common plane, a substantially rectangular-shaped symmetrical spacing device having pairs of tabs projecting from its upper and lower ends and having a cut-out in its forward and rearward surfaces, each of which cut out corresponds to the configuration of the forward end of said lock, a projecting tab of one pair on said spacing device disposed immediately adjacent said one projecting tab of said lock and a projecting tab of the other pair disposed immediately behind the lower horizontal edge of said cut-out in said body member whereby the forward surface of said spacing device lies in said common plane with the forward surface of the lock and body member and the lower edge defining the forwardly disposed cut-out in said spacing device engages the other projecting tab on said lock to maintain the lock in position in said body member, an aperture defined by surfaces in the side of said body member and overlying adjacent parts of said latching member, and means for moving said latching member in an upward direction to engage the upper edge of said apertured jamb.

References Cited in the file of this patent

UNITED STATES PATENTS

2,924,475	Russell	Feb. 9, 1960
2,928,689	Mineah	Mar. 15, 1960
2,980,458	Russell	Apr. 18, 1961