

March 15, 1966

W. P. BAERMANN

3,240,039

LATCH ASSEMBLY

Filed Nov. 13, 1962

2 Sheets-Sheet 1

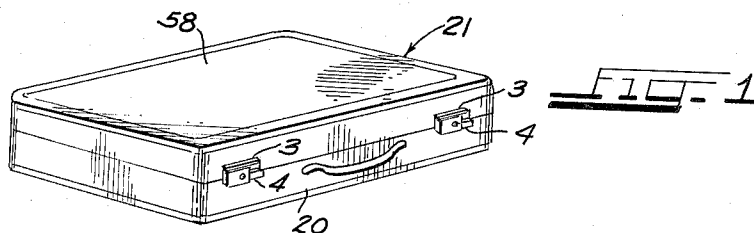


FIG. 1
1-1

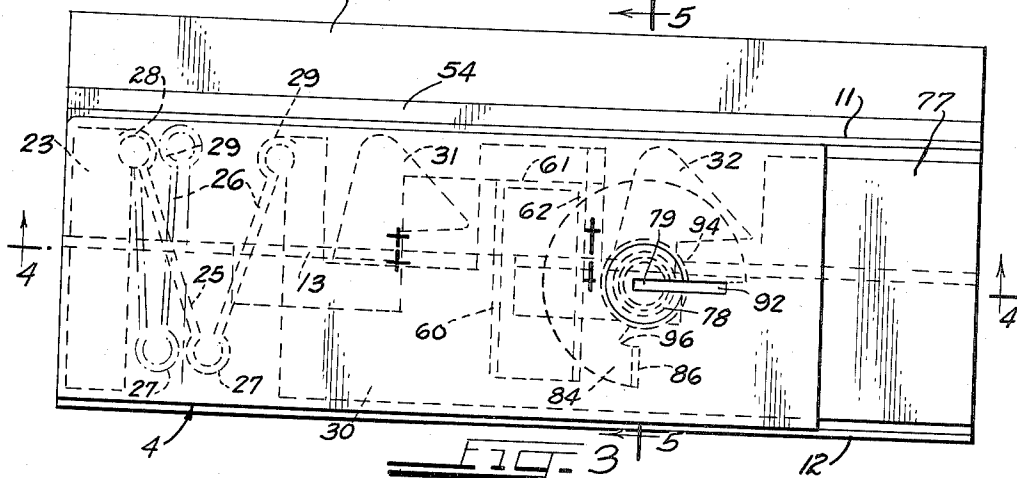


FIG. 2
5

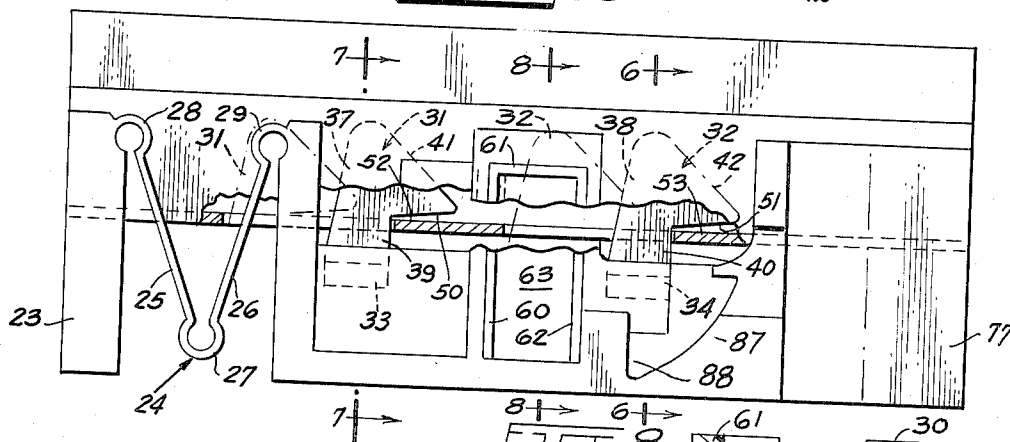


FIG. 3
5

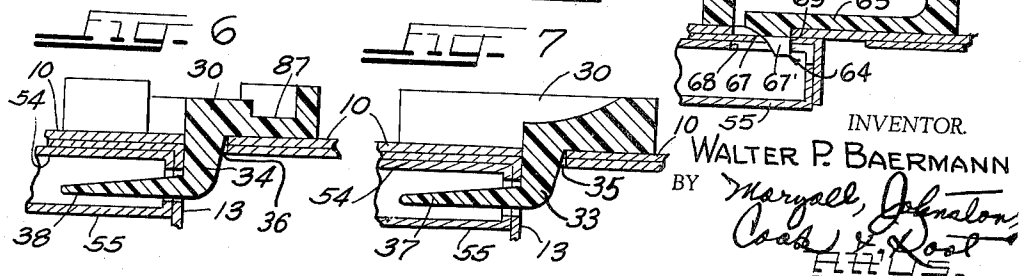


FIG. 4
5

INVENTOR
WALTER P. BAERMANN
BY *Maryall, Johnston*
Coak & Root
ATTORNEYS

March 15, 1966

W. P. BAERMANN

3,240,039

LATCH ASSEMBLY

Filed Nov. 13, 1962

2 Sheets-Sheet 2

FIG. 4

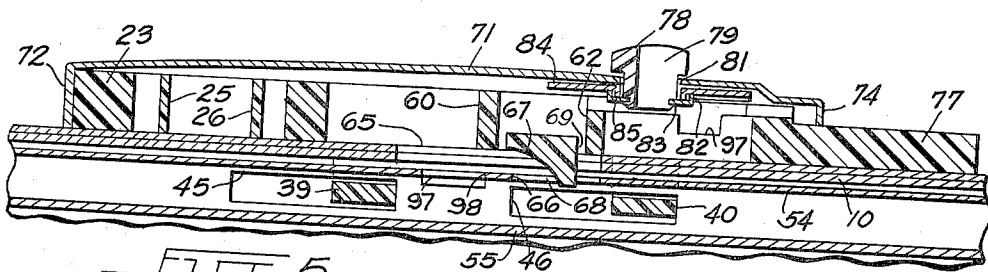


FIG. 5

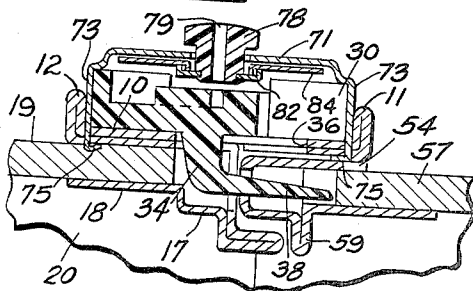
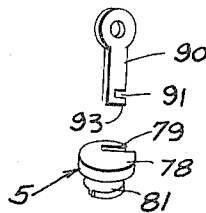
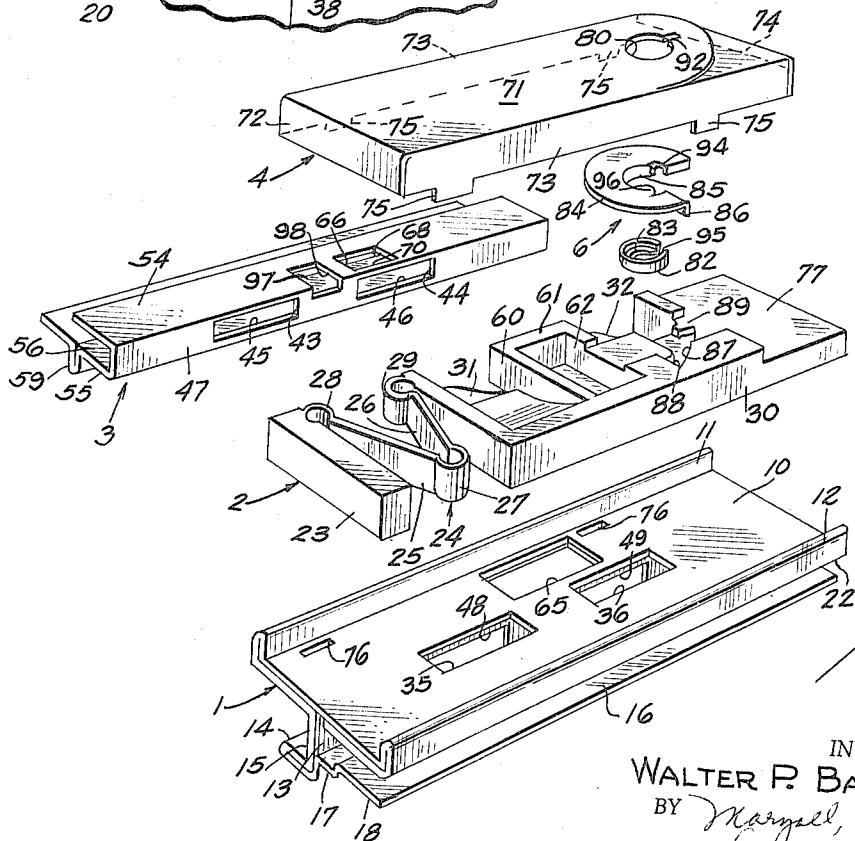


FIG. 9



INVENTOR
WALTER P. BAERMANN
BY *Marguel, Johnston*
Cook & Root
ATT'YS.

1

3,240,039

LATCH ASSEMBLY

Walter P. Baermann, Waynesville, N.C., assignor to Hawley Products Company, St. Charles, Ill., a corporation of Delaware

Filed Nov. 13, 1962, Ser. No. 237,225

11 Claims. (Cl. 70-71)

This invention, in general, relates to latch assemblies and latch parts and, more particularly, relates to latch assemblies and parts adapted for use on portable typewriter cases, articles of luggage, portable phonograph cases, courier cases, briefcases, and the like.

There are many types of lock assemblies for many types of uses. Locks on portable typewriter cases, articles of luggage, portable phonograph cases, courier cases, briefcases, and the like ordinarily have latch assemblies made of a number of metal parts including a metal latch member, mechanism mounting the latch member for movement between latching and unlatching positions, and sometimes a spring bias urging the latch or catch toward latching position.

This invention pertains to latch assemblies and latch parts in which the latch member or members are part of a slidable, molded latch body made of a molded synthetic polymer or resin. The unit includes as a molded, integral part thereof a bias piece used to urge the latch member(s) toward the latching position. The invention greatly simplifies latch assembly structures and also assembly steps in assembling the latch parts.

Briefly, the latch assemblies of the invention comprise only three essential, individual parts: (1) a latch fixture including a guideway in which the movable latch body is slidably mounted, (2) a molded latch body including integrally molded latch member(s) and a bias member, and (3) a strike plate having catch means adapted to interlock with the latch member(s). Other parts may be a key-operated lock mechanism coacting with the latch body to hold the latter in locked position when the lock is turned to locking position and a housing or cover plate for the latch fixture. These latch pieces are all shown in exploded view in FIG. 9.

It is a primary object of this invention to provide latch assemblies of the character heretofore described. A further object is to provide improvements in latch body structures for latch assemblies, and particularly latch body structures made as a molded, unitary piece. A still further object of the invention is to provide new latch assemblies and latch body structures in which the bias means of the latch assembly is an integral part of the latch body.

Another important object of the invention is to provide latch assemblies which consist of a very small number of essential parts, thereby considerably simplifying assembly steps of the latch assemblies. A further object is to provide latch assemblies composed of the units of a latch fixture including a guideway, a molded latch body slidable in the guideway, and a strike plate having catch means for the latch member or members of the latch body. Another object is to provide latch assemblies in which each of the foregoing parts is a single, unitary piece.

The foregoing and numerous other important objects, advantages, and inherent functions of the invention will become apparent as the same is more fully understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment of the invention.

In the drawings:

FIG. 1 is a case or luggage piece, e.g., a courier case, the figure serving to illustrate the general way in which latch assemblies of the invention may be used on articles of this type;

2

FIG. 2 is a top plan view of an embodiment of the latch assemblies of the invention;

FIG. 3 is a top plan view of the latch body and strike plate in latched relationship, with a fragment of the latter broken away;

FIG. 4 is a longitudinal section of the latch assembly of FIG. 2 taken on section 4-4 thereof;

FIG. 5 is a transverse section of the latch assembly taken on section 5-5 of FIG. 2;

FIGS. 6, 7 and 8 are transverse sections taken on sections 6-6, 7-7 and 8-8 of FIG. 3, respectively, and additionally including a cross-section of the latch fixture on the same respective section planes; and

FIG. 9 is an exploded, perspective view of the component parts of the latch assembly embodiment of FIGS. 2-8.

Referring to the drawings, the embodiment comprises as the basic components thereof a latch fixture 1, a molded latch body 2, a strike plate 3, a latch fixture cover plate or housing 4, a lock button 5, and lock pieces 6. The latch fixture 1 and the strike plate 3 may be formed as appropriately-shaped and stamped sheet metal strips, metal extrusions, or synthetic polymer or resin extrusions, the latter two being stamped or cut into appropriate lengths with the requisite holes or cut-outs. They may be an integral part of a protective flange fitted over the edges of the shells of the case, luggage, etc., or they may be only short strips fitted tightly on said edges.

The illustrated latch fixture 1 comprises a metal sheet bent to form a flat channel plate 10 and upstanding side walls 11, 12 on opposite longitudinal sides of the plate 10. These walls 11, 12 form a channel or guideway in which the latch body 2 is slidably mounted.

The latch fixture 1 further comprises a downwardly-extending plate 13 having at its lower end a bead 14 parallel with and below plate 10. These members form an axial channel 15 opening toward one side of the fixture below plate 10. The strike plate 3 is seated in channel 15 when the parts are in latched position. A wall or plate 16 comprising offset segments 17, 18 extends outwardly from the opposite side of plate 13 beneath plate 10. The edge of a wall 19 of a shell 20 of a case or luggage piece 21 is clamped between segment 18 of wall or plate 16 and the underside of plate 10 in the outwardly-directed groove 22 formed by these parts.

The latch body 2 is seated in the channel or guideway of the latch fixture 1. It is a molding of synthetic polymer or resin such as Dieldrin, nylon or the like. The body 2 comprises a block 23 on which is mounted one end of a V-spring or "hairpin spring" 24, so-called because of its shape. This member is molded polymer or resin piece made up of converging bars 25, 26 connected together at their converging ends by a circularly-arc'd bar piece 27 and connected at their diverged ends by circularly-arc'd bar pieces 28, 29 to the block 23 and slide block 30, respectively.

Slide block 30 comprises a block body portion on which the latch and lock parts are provided. A pair of latch elements 31, 32 project from the underside of slide block 30. They each have downwardly depending leg portions 33, 34 which extend through slots 35, 36, respectively, of the plate 10. Latch heads 37, 38 are supported by neck portions 39, 40 extending through slots 43, 49 in the wall or plate 13. The slots 35, 36 are of a length sufficient to permit the slide block 30 to slide between the latched and unlatched positions of the latch elements without binding of the legs 33, 34.

The latch heads 37, 38 have sloping camming edges 41, 42 which cam the slide block 30 in a sliding motion against the bias of the bias element or "spring" 24, e.g., toward the left as the latch body is viewed in FIGS. 2

3

and 3. These camming edges 41, 42 contact the edges 43, 44 of the slots 45, 46 in the leading edge 47 of strike plate 3 when the strike plate enters the slot 15 of fixture 1. The latch heads have latch edges 50, 51 which latch against the inner side portions 52, 53 of the leading edge 47 adjacent edges 43, 44 of slots 45, 46 after the latch heads 31, 32 have passed through slots 45, 46 and the bias element 24 has sprung the slide block 30 to latch position (to the right as viewed in FIGS. 2 and 3). The portions 52, 53 are the catch surfaces of the latch assembly.

The strike plate 3 comprises, in addition to leading edge 47, an upper plate 54 and parallel, lower plate 55 to form a groove 56 in which is securely held the edge of wall 57 of the other shell 58 of the case or luggage piece 21. The lower plate 55 has a downwardly-depending bead 59 which is an abutment wall for the outer edge of bead 14 of fixture 1.

The slide block 30 further has an open frame segment formed by walls 60, 61 and 62. At the bottom of this open frame segment is a lug 63 supported at one end on a wall of slide block 30. At the opposite, unsupported end of lug 63 there is a head 64 on the underside thereof. The lug 63 is positioned in slot 65 of plate 10, which slot is of a length sufficient to prevent binding on the lug 63 when slide block 30 moves between latched and unlatched positions.

In latch position, the head 64 seats in slot 68 in plate 54. It has a cam surface 67 (FIG. 8) which causes the head 64 to rise over the corner formed by plates 47 and 54. The head 64 then seats in slot 68. The edge 69 of head 64 abuts against edge 70 of slot 68 when the parts are in latched position. Thus, head 64 and slot 68 act as additional latch and catch members. The head 64 rides up out of slot 68 when slide block 30 is moved to unlatched position by virtue of a second sloped camming surface 67' (FIG. 8) on the head 64, which camming surface 67' cams against edge 66 of slot 68 when the slide block 30 moves from latched position toward unlatched position.

The housing or cover plate 4 comprises a top plate 71 with a downwardly-depending end plate or wall 72, downwardly-depending side walls 73, and a short, downwardly-depending end wall 74. The side walls 73 fit inside walls 11, 12 of plate 10 and have on their lower edges ears or tabs 75 which fit in slots 76 of plate 10. When the ears or tabs 75 are bent against the underside of plate 10, the housing or cover plate 4 is secured tightly on the fixture 1.

The outermost end of slide block 30 is a bar segment 77 extending outwardly from the cover plate 4 beneath the wall 74. It protrudes sufficiently from the cover plate to permit slide block 30 to be moved from its normal latched position to unlatched position by finger pressure on segment 77.

When a lock mechanism for the latch assembly is desired, it may be one of relatively simple character. In the illustrated case, the lock structure comprises a button 78 having a key slot 79. The button 78 rotatably fits in the round hole 80 of cover plate 4. Its shank 81 has fitted near the bottom thereof a retainer washer or ring 82, the base 83 of which fits in a groove in shank 81. A lock ring 84 has a round wall 85 rotatably resting on base 83. The ring 84 has a lock lug 86 which fits in the upper part of quarter-arc groove 87 of slide block 30.

When lock ring 84 is rotated to a position where lug 86 is in segment 88 of groove 87, the lug blocks sliding of the slide block 30 and thus prevents unlatching of the latch assembly. When lock ring 84 is rotated a quarter turn counterclockwise, lug 86 is positioned in slot 89. The slide block 30 can now move to unlatch position because the lug 86 passes through slot 89 when the slide block 30 is pushed to unlatch position.

4

The key for the lock has a blank 90 having a slot 91 in a side thereof. The key fits in slot 79 of button 78, slot 95 in washer 82, and slot 92 intercepting the hole 80 in top plate 71 of cover plate 4. When slot 91 of the key is even with the plate 71, the key may be rotated. When rotated counterclockwise, the tip 93 of the key may contact the lock ring 84 in the notch 96 to turn the lock ring to unlock position. The key can then be rotated clockwise until it can be withdrawn through slot 92 of the cover plate. When the key is reinserted to lock the latch assembly, it is rotated, after insertion, clockwise until the tip of the key strikes the ring 84 in notch 96. The key rotates lock ring 84 clockwise until lug 86 is in locking position in groove 88. The key can then be rotated counterclockwise until it can be withdrawn through slot 92 in the cover plate. The lock ring rotates about one-quarter turn between lock and unlock positions.

The illustrated lock structure has the advantages of having a small number of parts and is one that is assembled readily. Other lock structures having a lock part coacting with slide block 30 to lock the latter against sliding may be substituted, however, if desired.

The strike plate 3 may have next to slot 68 a slot 97 which cuts through the corner formed by leading edge 47 and top plate 54 of the strike plate. The head 64 will drop into the slot 97 when the slide block 30 is moved to unlatch position. The block 30 will be held in unlatch position by the side 69 of the head, which bears against edge 98, of slot 97, until the strike plate 3 is moved out of the groove 15 of fixture 1. Then the slide block 30 springs back to latch position under the urging of bias 24.

It is thought that the invention and its numerous attendant advantages will be fully understood from the foregoing description, and it is obvious that numerous changes may be made in the form, construction and arrangement of the several parts without departing from the spirit or scope of the invention, or sacrificing any of its attendant advantages, the form herein disclosed being a preferred embodiment for the purpose of illustrating the invention.

The invention is hereby claimed as follows:

1. A latch assembly comprising a latch fixture having a bottom wall and side walls defining a guideway, a molded synthetic resin slide block longitudinally slidable in said guideway between latch and unlatch positions, a latch member mounted on and extending laterally outwardly from said slide block, said latch fixture having a hole through which the laterally extending latch member extends, said hole being of a size sufficient to allow said block to slide longitudinally in said guideway between said latch and unlatch positions without binding of said latch member, a strike plate adapted to be brought into juxtaposition to said latch fixture, catch means on said strike plate adapted to coact with said latch member, and a bar spring of molded synthetic resin attached at one end thereof to said slide block and yieldably urging said slide block and latch member toward latch position.

2. A latch assembly comprising a latch fixture having a bottom wall and side walls defining a guideway, a slide block slidably mounted in said guideway, a latch member mounted on and extending outwardly from said slide block, said latch fixture having a hole through which the latch member extends, said hole being of a size sufficient to allow said block to slide in said guideway between latch and unlatch positions without binding of said latch member, a strike plate adapted to be brought into juxtaposition to said latch fixture, wall means on said fixture defining a groove in which said strike plate is seated against said fixture, said latch member extending into said groove, a hole in said strike plate providing an edge to catch said latch member, and bias means yieldably urging said slide block and latch member toward latch position.

5

3. A latch assembly as claimed in claim 2 wherein said latch member has a sloping edge adapted to contact said edge of said hole to cam said latch member as it enters said hole.

4. A latch assembly comprising a latch fixture having a bottom wall and side walls defining a guideway, a slide block slidably mounted in said guideway, a latch member mounted on and extending outwardly from said slide block, said latch fixture having a hole through which the latch member extends, said hole being of a size sufficient to allow said block to slide in said guideway between latch and unlatch positions without binding of said latch member, a strike plate adapted to be brought into juxtaposition to said latch fixture, wall means on said fixture defining a groove in which said strike plate is seated against said fixture, an upper wall on said strike plate having a hole therein, said latch member consisting of an arm cantilevered on said slide block, said arm having a downwardly-extending lug on the outer end thereof, a sloping side on said lug adapted to cam said lug upwardly when said lug contacts said strike plate as the strike plate and said fixture are brought into juxtaposition, said lug dropping into said hole in said strike plate and latching against an edge thereof, a second sloping side on said lug adapted to cam said lug upwardly when said second side contacts another edge of said hole in said strike plate as said slide block and latch member are moved toward unlatch position, and bias means yieldably urging said block and latch member toward latch position.

5. A latch assembly as claimed in claim 4 wherein said strike plate has a second hole adjacent to but spaced from said last-mentioned edge, said lug entering said second hole upon movement to unlatch position, said lug being held in said second hole to keep said block and latch member in unlatch position until said strike plate is moved away from said fixture.

6. A latch assembly as claimed in claim 1 wherein said latch assembly includes a lock operable by a key, said lock including a rotatable lock ring adjacent said slide block, said lock ring being rotatable between lock and unlock positions, a lug on said lock ring, and a groove in said slide block in which said lug seats in lock position of said lock ring to lock said slide block in latch position.

7. A latch assembly as claimed in claim 6 wherein said slide block and bar spring are enclosed by a cover plate mounted on said fixture, and said lock ring is rotatably mounted on the underside of said cover plate.

8. A latch assembly comprising a latch fixture having a bottom wall and side walls defining a guideway, a slide block longitudinally slidable in said guideway between latch and unlatch positions, a latch member mounted on and extending laterally outwardly from said slide block, said latch fixture having a hole through which the laterally extending latch member extends, said hole being of a size sufficient to allow said block to slide longitudinally in said guideway between said latch and unlatch positions without binding of said latch member,

6

a strike plate adapted to be brought into juxtaposition to said latch fixture, catch means on said strike plate adapted to coact with said latch member, and a spring yieldably urging said slide block and latch member toward latch position.

9. A latch assembly as claimed in claim 8 wherein said latch assembly includes a lock operable by a key, said lock including a rotatable lock ring adjacent said slide block, said lock ring being rotatable between lock and unlock positions, a lug on said lock ring, and a groove in said slide block in which said lug seats in lock position of said lock ring to lock said slide block in latch position.

10. A latch body comprising a slide block, a latch member having a leg attached to the bottom of said slide block and extending downwardly therefrom, a neck portion attached to and extending horizontally from said leg below said slide block, a latch head on said neck portion, and grooved means in the upper surface of said block adapted to receive a lock lug of a latch assembly with a lugged lock member.

11. A latch assembly comprising a latch fixture having a bottom wall and side walls defining a guideway, a slide block slidably mounted in said guideway between latch and unlatch positions, said latch fixture having a hole in said bottom wall, a latch member having a base portion mounted on the bottom of said block and extending downwardly through said hole, latch means on said base portion below said bottom wall, said hole being of sufficient size to allow said block to slide longitudinally in said guideway between latch and unlatch positions of said latch means without binding of said latch member, bias means coacting with one end of said slide block and urging said slide block to slide in said guideway toward latch position, a cover member mounted on said fixture over said block and bias means, and a bar segment extending from the opposite end of said slide block and projecting from the corresponding end of said cover member, whereby said bar segment may be used to slide by finger pressure said slide block toward unlatch position.

References Cited by the Examiner

UNITED STATES PATENTS

45	63,041	3/1867	Hare	70—70
	534,276	2/1895	Mihills	292—153
	550,424	11/1895	Smith	70—150
	1,001,217	8/1911	Nitzsche	70—150
	1,366,909	2/1921	Frommer	70—70
	1,666,654	4/1928	Hiering	70—67
50	2,375,357	5/1945	Friedman	18—47.5
	2,469,113	5/1949	Hooker	292—332
	3,125,366	3/1964	Cetrone et al.	292—169

FOREIGN PATENTS

55	149,535	12/1952	Australia.
	3,100	2/1903	Great Britain.
	278,191	10/1927	Great Britain.

ALBERT H. KAMPE, *Primary Examiner.*