Dec. 14, 1971

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DIE-CAST LOCKS FOR SUITCASES

Filed Nov. 10, 1970

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ABSTRACT OF THE DISCLOSURE

A latch lock for suitcases in which an upper member secured to the cover has a vertical plate tongue extending beyond the bottom edge of the cover with a vertically slidable latch plate having a laterally extending hook mounted for vertical sliding movement with the hook lying within the dimensions of the vertically extending plate and spring-pressed to a raised inoperative position, and having a finger-engageable handle for projecting the latch hook, a lower member secured to the bottom portion of the suitcase has a horizontally slidable catch which cooperates with the latch hook of the upper member and is horizontally slidable by finger-engagement with the manually engageable slide to move the catch laterally for disengagement of the latch hook and catch hook to permit opening of the suitcase, the latch hook and catch hook having cam surfaces whereby closing the suitcase automatically causes the latch and catch to engage, due to spring urging of the parts. A key lock is provided for preventing the catch slide from being surreptitiously opened.

Heretofore, various types of latches have been used on suitcases and trunks, and many of them have pivoted elements which break off, or bend, when accidentally struck, and therefore have not been entirely satisfactory. Also, many of the latches and locks were made of sheet metal and subject to bending on accidental engagement, which rendered the latching mechanism unsatisfactory for various reasons.

The present die-cast lock is made by die-casting aluminum alloy or zinc alloy in precise arrangement to assure accurate manufacture.

An object of the present invention is to provide the latch with a key lock which is simple in construction, strong, easy to handle, and will reliably join the cover and the body of suitcases and prevent distortion.

Other and further objects will be apparent as the description proceeds and upon reference to the accompanying drawings:

FIG. 1 is a perspective of a suitcase equipped with a pair of locks of the present invention.

FIG. 2 is a fragmentary perspective of the cover of a suitcase with the upper lock member base secured in position, showing the downwardly extending plate for reception in a slot in the lower member and showing the vertically movable latch slide in retracted position.

FIG. 3 is a fragmentary perspective of the bottom of a suitcase showing the cooperating lower lock member with the cooperating catch extending flush with the upper edge of the lower lock base and showing the slide for moving the catching control of the lock.

FIG. 4 is an elevational view of the lock in assembled condition, showing the internal mechanism by having the back plates removed.

FIG. 5 is a similar elevational view showing the parts in releasing position.

FIG. 6 is a rear perspective of the manually operable slide for the catch in the lower member.

FIG. 6a is an exploded view of the slide of FIG. 6, showing the key lock in locked position.

FIGS. 7a, 7b, 7c, and 7d are the front view, a bottom view, a rear view, and a side view, of the upper base member.

FIGS. 7e, 7f, and 7g, are sections taken on the corresponding section lines of FIG. 7c.

FIGS. 8a, 8b, 8c, and 8d, are a front view, a plan view, an end view, and a rear view, of the lower base member.

FIGS. 8e, and 8f, are sections taken along lines 8e and 8f, respectively, of FIG. 8c.

Referring more specifically to the drawings, the upper portion of a lock is attached to the cover 3 of a suitcase and includes a base 4 in which a latch slide 16 is slidable mounted and moved downwardly by digital engagement with the finger engaging plate 5. The die-cast base 4 of aluminum or zinc alloy is provided with threaded bosses 6, 6' adapted to receive attaching screws for securing such base to the cover 3 of a suitcase. The base 4 is of box-like shape, as seen from the front rear with studs 8, 8' projecting rearwardly from the front wall for cooperation with a back plate 7 to retain the latch slide 16 in an operating position for sliding movement with the guide plate 16 being received in a cut-out 14 and a shank 18 cooperating with the cut-out 12 for slidable mounting the latch slide for vertical movement. The latch plate is moved upwardly by a U-shaped spring 19 having a number of coils extending around the stud 8' with one arm of the spring engaging the bottom plate 9 of the base and the other arm engaging the inwardly struck lug 20 to normally urge the latch plate to the position shown in FIG. 5. The latch plate includes a shank 18 which slidable engages in the slot 12 and has a laterally projecting hook 17 for engagement with the hook 24 carried by the shank 25 of the catch plate 29. It will be noted that the hooks 17, and 24 are provided with cam surfaces 17' and 24' whereby when the cover of the suitcase is closed and the catch slide 16 is moved downwardly the cam surfaces 17' and 24' engage one another causing the catch slide 29 to move to the right as seen in FIGS. 4 and 5 and the horizontal surfaces of the latch and catch interengage as shown in FIG. 4 to retain the upper and lower members in latched relation.

Reinforcing ribs, of T-shape, 8r serve as bearing surfaces for the latch plate 16, the cover plate 7 serving as the opposite bearing to maintain the latch plate 16 in its operative plane, the plate 7 being secured by riveting the upper ends of the studs 8 and 8' over the outer surface of the plate 7. The downwardly extending plate 11 is tapered in both directions, as shown in FIGS. 7c, 7d, 7e, and 7f, to facilitate the proper connecting relation between the upper and lower lock members.

The lower lock member includes a base 23 of aluminum or zinc alloy of rearwardly open box-like construction, with a slot 47 in the upper wall thereof, a latch slide 29 being mounted in a horizontally extending slide way formed by bottom wall 40 and ledges 29a and 29b, with the latch slide 29 having a shank 25 extending between the ledges 29a and 29b and carrying the catch hook 24 which cooperates with the latch 17 as previously explained, the plate 29 being guided in the groove 28 formed by the ledges 29a, 29b and the wall 49. The catch plate 29 is moved to its operative latching position as shown in FIG.
4. by the U-shaped spring 26 which is held in position by the stud 50 extending rearwardly from the front wall and the rearward movement of the upper member maintains the U-shaped spring 26 in its proper operative position, the back plate 40 being retained in position by means of the rivet studs 41, 41', 41", and 41" passing through the plate 40 and riveted over to maintain the parts in assembled relation so that the planes of the latch hook 17 and catch hook 22 will both be parallel.

The lower base 23 is provided with a groove 34 in the front thereof to receive the slide shown in FIG. 6, which slide includes a forwardly opening box-like structure 43 which has rearwardly extending struck-out lugs 33 and 33' which are adapted to pass through an elongated opening 25 in the back of the lugs and such lugs extend through a slot in the catch plate 29 with the slots cooperating with counter sunk recesses 55, 55' so that the ends of the lugs 33 and 33' may be twisted to maintain the manual slide M in cooperative relation with the catch slide 29 whereby the catch slide may be moved by the manual slide 35.

The slide 35 includes the box-like member 43 as described above and such box-like member carries a key core 30 having a key receiving slot and a horseshoe shaped flange, and such key core is rotatably mounted in an opening in the slide 29 and in the rear wall of the box-like member 43, and such flange retains the cam 31 which includes a plate 64 which is rotatably mounted on the key core 30 and has a surrounding flange 67 forming a cam, as clearly shown in FIG. 6b, and such cam engages a U-shaped spring 62 which is held in position by a struck-out lug 68 and engages the flange 67 to retain the cam 31 in the full position as shown in FIG. 6b to prevent movement of the slide 35 by the engagement of the sharp head 66 of the cam 30 with the stud 53. The cam 31 can be rotated in operative position so that the point 66 thereof extends upwardly and out of engagement with the stud 53 by operation with a conventional key which extends into the key receiving slot of the key core 30.

The plate of the cam 30 is provided with a cut-out portion 64 which is adapted to be engaged by the key when it is inserted into the key receiving slot of the cover and the key core whereby the slide 29 may be locked in its operative position to maintain the lock in locked position or it can be moved to its operative position so that the front slide will move the catch shank 25 in proper operative relation as shown at 46 in FIGS. 4 and 8b.

From the above description, the advantages and operation of the suitcase lock are believed to be obvious, but to more clearly demonstrate the invention it will be noted that the plate 11 of the upper member is adapted to be received in the cut-out 48 and is effectively guided by the ribs 48a and 48b of its smooth outer surface while the inner surface is provided with flanges 10, 10' and 10" but these flanges are tapered as shown in FIGS. 7e and 7f, and the plate 11 is tapered as shown in FIG. 7e, so that upon closing the cover the plate 11 is received in the cut-out 48 and serves as a tongue cooperating with the convex portion 46 of the plate 40 to guide the latch 17 in the plate with the catch hook 22 and accurate alignment is assured because of the flanges 10, 10' and 10" engaging the convex portion 46 and the ribs 48a and 48b engaging the smooth plateau 11, so that the hooks 17 and 24 lie in the same plane. However, the hooks are not positively engaged until after the cover is closed with the plate 11 accurately received in the cut-out 48 and the finger-engaging surface 5 is pressed downwardly to cause the hook 17 to move downwardly so that the cam surface 17 engages the cam surface 24 and moves the slide 29 against the tension of the spring 26 and the horizontal surface of the hooks then interengage with the cover and the bottom of the suitcase are latched together. A key can then be used to operate the key core 30 and a portion of the key will engage the fan-shaped slot 63 in the plate of the cam 30 and move the cam to its full-line position, as shown, or move the cam so that the sharp end 66 extends upwardly and away from the stud 53, the stud 53 and the similar stud 53' being formed in the die-casting with the openings 60 and 60' being provided to permit the sliding action of the slide 35 when the cam 31 is moved to its inoperative position.

It will be apparent that changes may be made within the spirit of the invention as defined by the valid scope of the claims.

What is claimed is:

1. A lock for a suitcase comprising an upper base member for carrying a latch, and a bottom base member for carrying a catch, each base member being provided with means for attachment to a bottom or cover of a suitcase, said upper base member having a vertically extending slideway for receiving a latch slide plate, a vertical guide plate extending downwardly from said upper base adjacent said slideway, a latch slide plate having a shank extending substantially parallel to said vertical guide plate and mounted for sliding movement in said base, a latch hook extending transversely of said shank, a spring urging said latch slide to raised retracted position with the hook lying within the dimensions of the vertical plate, the lower base member having a slideway on the back thereof extending transversely of the slideway of said upper base member, a catch plate slidably mounted for transverse movement in said lower base, a catch hook having a shank projecting upwardly and having a laterally extending hook for cooperation with the latch hook of the upper member, the upper edge of said lower base having a slot for receiving the vertical guide plate and the latch hook of said upper member to maintain the catch and latch in operative relation, said lower base having a slideway extending transversely on the front of said base, a manually operable slide mounted for transverse movement in said front slideway, and means to connect said front slide to said catch slide whereby movement of said lower base member will move the catch laterally away from the latching hook to permit separation of the upper and lower members.

2. The invention according to claim 1 in which a spring is provided to urge the catch slide to latching position.

3. The invention according to claim 3 in which a key core rotatably supports a cam and the key moves the cam from a position in which the cam engages a stud to lock the slide and the key can move the cam to operative position to release the slide whereby the catch slide may be moved to disengage the latch hook.

4. The invention according to claim 3 in which the key core rotatably supports a cam and the key moves the cam from a position in which the cam engages a stud to lock the slide and the key can move the cam to operative position to release the slide whereby the catch slide may be moved to disengage the latch hook.

5. The invention according to claim 1 in which the base members are die-castings and the slideways are formed in the castings and ribs are provided on the vertical guide plate with the ribs and the guide plate being tapered in all directions to facilitate accurate alignment of the upper and lower members.

6. The invention according to claim 5 in which the slideways are formed in part by back plates.

7. The invention according to claim 1 in which the vertical guide plate is tapered and the guide plate being tapered in all directions to facilitate accurate alignment of the upper and lower members.

8. The invention according to claim 1 in which the catch slide and the front slide are provided with key receiving means and a locking cam is carried by the catch slide and front slide and an abutment stud is provided on the lower base for engagement with the cam and the cam has a fan-shaped cut-out for cooperation with the key and
a spring maintains the cam in position to cooperate with the stud or to be out of cooperation therewith to provide for locking the lock and providing for releasing the lock.

9. The invention according to claim 1 in which the front slide includes a box-like member having struck-out portions and the lower base is provided with an opening for receiving the struck-out portions and such struck-out portions are connected to the catch slide.

10. The invention according to claim 1 in which the base members are provided with threaded bosses opening rearwardly therefrom and the upper and lower bases are secured respectively the cover and the bottom of a suitcase.

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U.S. Cl. X.R.