

[54] **SLIDABLY REMOVABLE PADLOCK ASSEMBLY**

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[73] Assignee: Security Technology Corporation, San Jose, Calif.

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[51] Int. Cl. ... E05b 63/12, E05b 65/06, E05b 67/36

[58] Field of Search ..... 70/32, 33, 34, 23, 89, 70/90, 91, 101, 102, 131, 417; 292/300, 304

[56] **References Cited**

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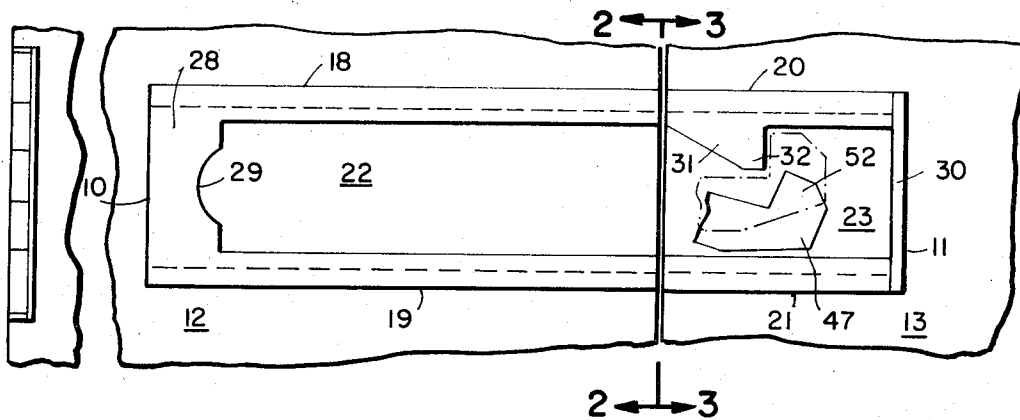
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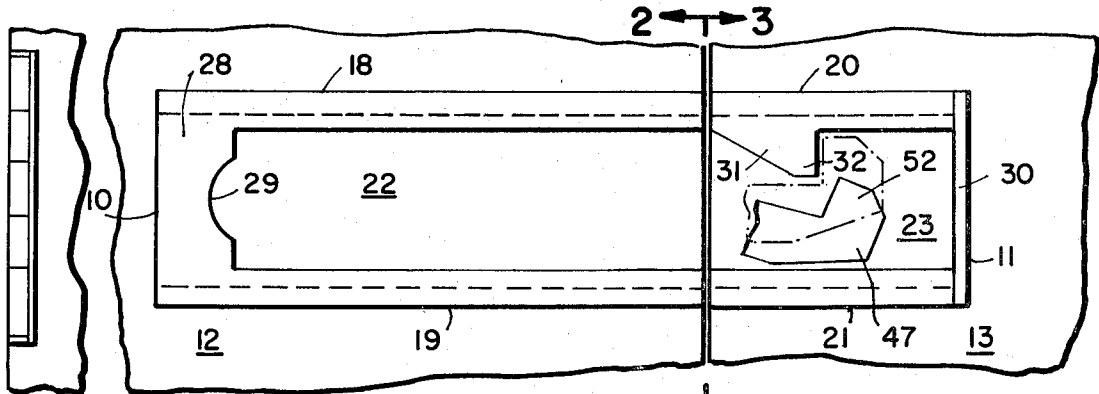
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[57] **ABSTRACT**

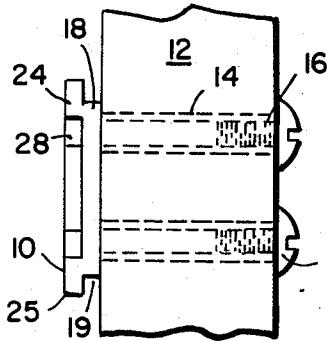
A padlock assembly is disclosed which includes a padlock which can be slidably mounted on tracks of mating base plates mounted on a door and door jamb, respectively. The padlock has a latch which is adapted to engage a latch-retaining member mounted on the base plate of the door jamb and be locked in position. The latch and latch-retaining member are entirely enclosed by the body of the padlock when the padlock is mounted in position on both base plates, thereby eliminating conventional hasps, shackles, loops, etc. The padlock can be quickly and easily removed from the base plates.

**2 Claims, 10 Drawing Figures**

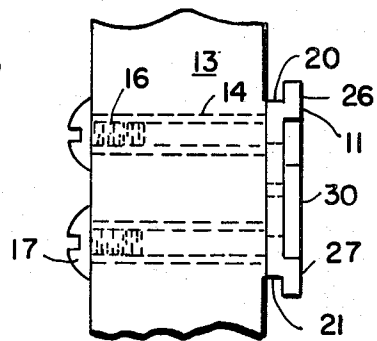




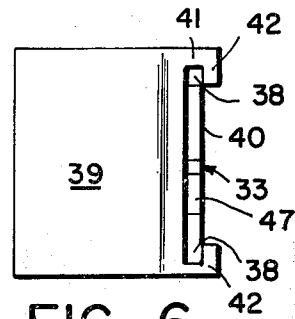
2 ← 3 FIG\_1



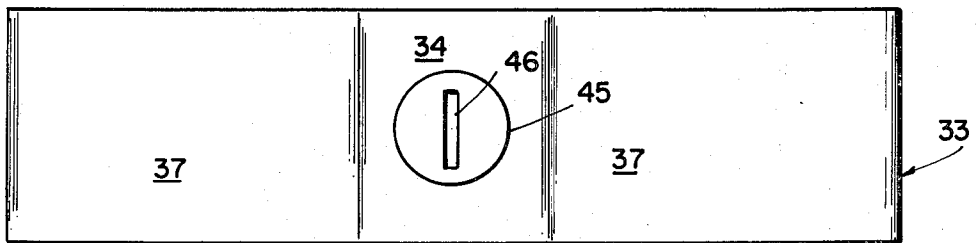
FIG\_2



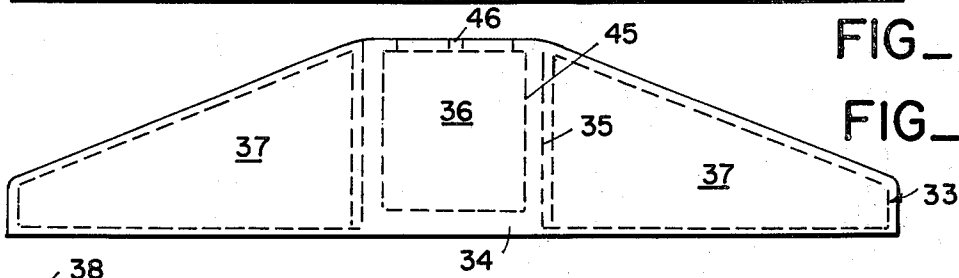
FIG\_3



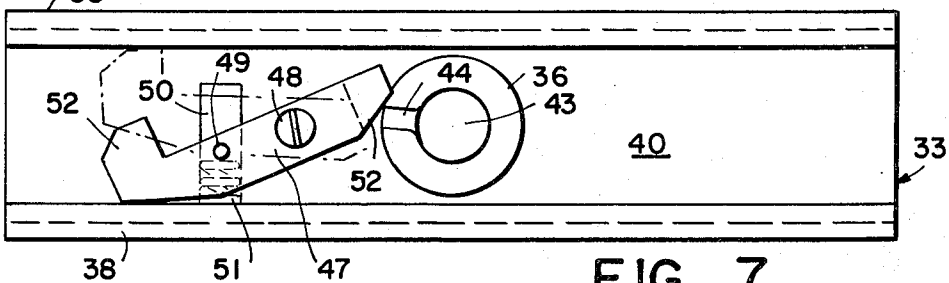
FIG\_6



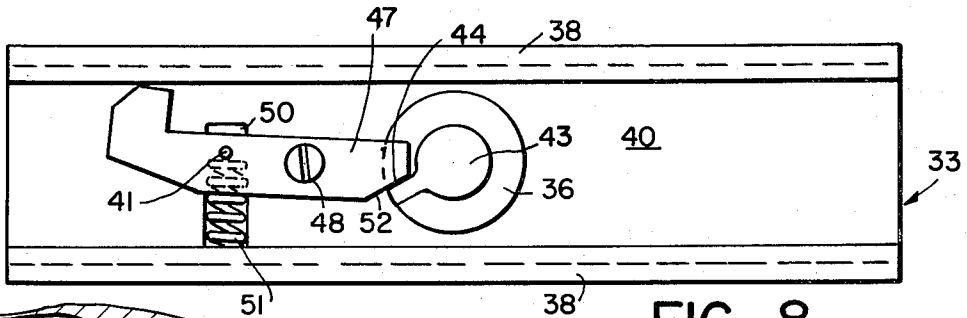
FIG\_4



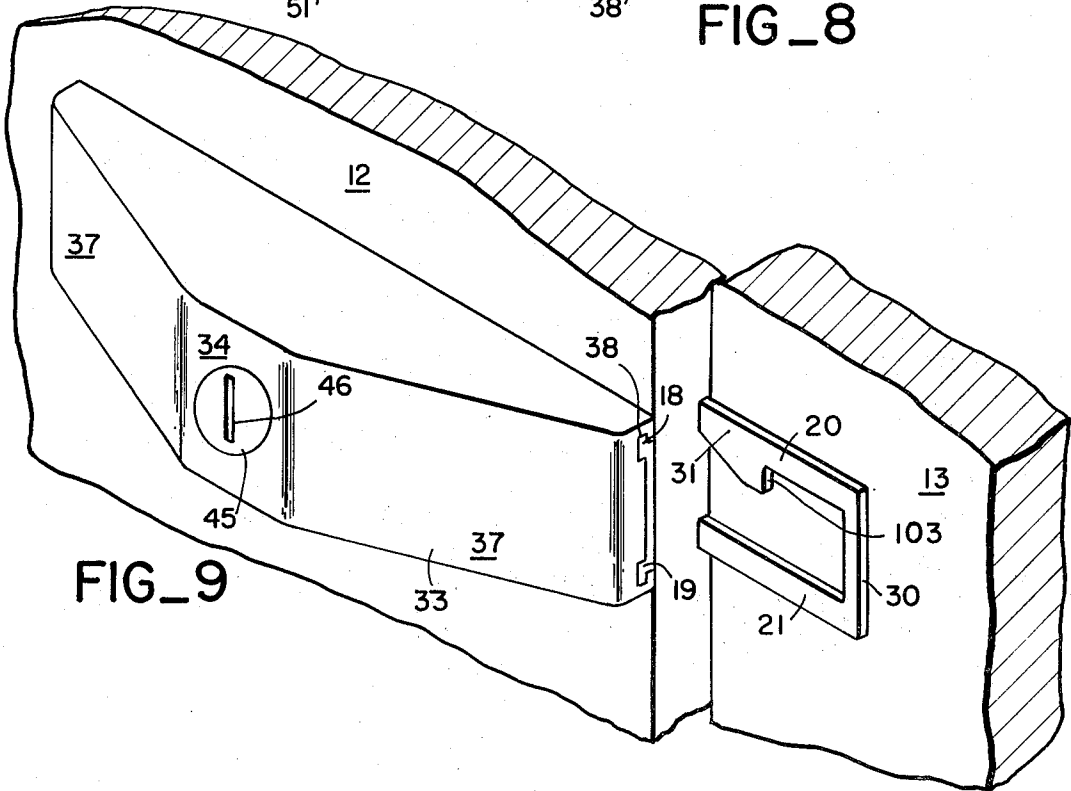
FIG\_5



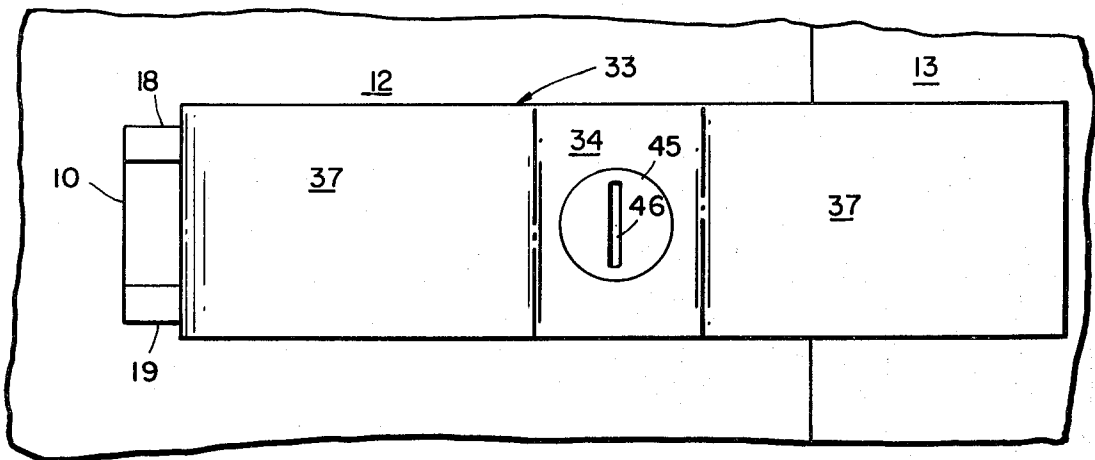
FIG\_7



FIG\_8



FIG\_9



FIG\_10

## SLIDABLY REMOVABLE PADLOCK ASSEMBLY

## BACKGROUND OF THE INVENTION

## 1. Field of the Invention

The invention relates to locks; and, more particularly to a padlock assembly which includes a padlock which can be quickly mounted on or removed from track members mounted on a door and door jamb, respectively, whereby the working components of the padlock are entirely enclosed by the body thereof.

## 2. Description of the Prior Art

Conventional padlocks include a hinged or sliding shackle that provides the means for locking the padlock by passing through a staple, eye or loop of a hasp or the like provided on the door or receptacle to be fastened. The shackle is then closed and locked so that it cannot be released without a proper key.

Generally, such shackles have one end which is not removable from the case or housing portion of the padlock. That is, this end is generally slidably disposed in an aperture in the case of the padlock and retained therein by a shackle-retaining member when in a locked position. Usually, this is accomplished by providing an arcuate cutout portion in one leg of the shackle which receives the retaining member, such as a spring-biased ball or the like, when the shackle is locked. The ball is retained in this position by conventional locking and unlocking means, such as a cylinder, associated with the case of the padlock.

Further, rain or the like may enter such shackle holes in the case and quickly rust or otherwise corrode the inner mechanisms thereof.

Generally, the outer diameter of conventional shackles is only about one-fourth inch or so. By cutting away an arcuate portion thereof, only about one-eighth inch or so of the shackle is left. Such a relatively small area of retention for the padlock enables such padlocks to be easily opened. For example, since the shackle is only about one-fourth inch or so in outer diameter, it can be easily cut. The loop or eye of the hasp into which the shackle is inserted may also be cut. Modern materials, such as case-hardened steel, have been used to prevent this. However, acid may be poured down the aperture in the case in which the heel portion of the shackle is locked. The acid will eat away the spring biasing the ball or similar retaining member since, in most cases, only about 1/8-inch movement thereof is required. A blow or the like on the top of the case will then quickly separate the case from the shackle.

Further, as discussed previously, such padlocks are generally used with hasps or the like. Such hasps include a loop fixed on a door (or door jamb) and require a hinged plate on the door jamb (or door) having a slot therein which passes over the loop. The shackle of the padlock is then passed through this loop and locked in position. In some cases, the hinge pin holding the plate may be removed by unscrewing, acid treatment, etc.

There thus exists a need for a lock assembly which eliminates conventional shackles, loops, hasps or the like and thus cannot be picked or destroyed by conventional picking tools, acid treatment or the like. The working components of such an assembly should be hidden from view when in locked position.

## SUMMARY OF THE INVENTION

It is an object of this invention to provide a padlock assembly without any exposed working parts.

5 It is a further object of this invention to provide a padlock assembly which can be quickly and easily moved into and out of locking engagement.

It is still another object of this invention to provide a padlock assembly having no conventional parts thereof, such as shackles, loops and hasps, which can be easily cut away.

It is another object of this invention to provide a padlock assembly having no hinged parts and which can be operated with only one hand.

15 These and other objects are preferably accomplished by providing a padlock which can be slidably mounted on tracks of mating base plates mounted on a door and door jamb, respectively. The padlock has a latch which is adapted to engage a latch-retaining member mounted on the base plate of the door jamb and be locked in position. The latch and latch-retaining member are entirely enclosed by the body of the padlock when the padlock is mounted in position on both base plates, thereby eliminating conventional hasps, shackles, loops, etc. The padlock can be quickly and easily removed from the base plates.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a vertical view of a portion of a mating door and door jamb having base plates mounted thereon in accordance with the teachings of my invention;

FIGS. 2 and 3 are end views of the door and door jamb, respectively, taken along the lines 2—2 and 3—3 of FIG. 1, respectively;

35 FIG. 4 is a front elevational view of a padlock to be used in the padlock assembly of my invention;

FIG. 5 is a top plan view of the padlock of FIG. 4;

FIG. 6 is an end view of the padlock of FIG. 4;

40 FIG. 7 is a rear view of the padlock of FIG. 4 showing the latch member in its "normal" unlocked position;

FIG. 8 is a rear view of a portion of the padlock of FIG. 4 showing the latch member in its locked position;

45 FIG. 9 is a perspective view of the complete padlock assembly of my invention showing the padlock slid into position on the base plate of a door prior to locking the assembly; and

50 FIG. 10 is an elevational view of the padlock assembly of my invention showing the padlock slid onto the base plates on both the door and door jamb of FIG. 9 and locked in position thereon.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

55 Referring now to the drawings, FIG. 1 shows a pair of elongated generally flat base plates 10 and 11. Plate 10 is mounted on a door 12 or the like while plate 11 is mounted on a door jamb 13. Of course, the term "door" is relative and may refer to any closure member associated with an opening, such as a closet, window, receptacle, etc., that it is desired to lock.

60 Plates 10 and 11 may be secured to door 12 and door jamb 13 by any suitable means, such as screws, nuts and bolts, etc. However, it is preferable that no part of such securing means be accessible from the outside of the door 12 ("outside" referring to the opposite side of the opening which is being locked). Thus, as shown in FIGS. 2 and 3, my plates 10 and 11 may be provided

with tubular posts 14 which may be integral therewith and pass through suitable apertures formed in the door 12 (or door jamb 13 of FIG. 3). Posts 14 may be either externally or internally threaded for receiving the shank portion 16 of bolts 17. In this manner, plates 10 and 11 are secured in position without any screws or the like visible or accessible from outside of door 12.

As can also be seen in FIG. 2, plate 10 includes upper and lower track portions 18 and 19, respectively. Similar track portions 20 and 21 are provided on plate 11 (see FIG. 3). When door 12 is closed so that it mates with door jamb 13 as shown in FIG. 1, the respective track portions 18, 20 and 19, 21 are aligned as shown. The inner surfaces 22 and 23 of plates 10 and 11 also move into mating alignment.

Track portions 18 through 21 are preferably formed by means of elongated rail members (24, 25 on plate 10; 26, 27 on plate 11). Preferably, the rail members 24, 25 of plate 10 are interconnected by end rail member 28. This member 28 may include an arcuate cutout portion 29 for reasons to be discussed further hereinbelow. In like manner, rail members 26 and 27 of plate 11 are interconnected by end rail member 30. The free ends of rails 24, 25 of plate 10 and rails 26, 27 of plate 11 are not interconnected for reasons also to be discussed further hereinbelow.

An extension member 31 is provided on the upper rail member 26 of plate 11. Extension member 31 extends downwardly and inwardly toward the center of plate 11 and has a lip portion 32 at the free end thereof for reasons to be discussed hereinbelow.

Referring now to FIGS. 4 through 7, a generally trapezoidal-shaped padlock 33 is shown having a main body portion 34. Body portion 34, as can be seen in FIG. 5, has a central portion 35 (FIG. 5) for receiving a conventional key-receiving cylinder 36 therein. Cylinder 36 may be any suitable type of mechanism. As can also be seen in FIG. 5, the side portions 37 of main body portion 34 taper downwardly from central portion 35 to the ends thereof. Of course, any suitable configuration may be used. However, the configuration selected uses a minimum amount of material to accomplish a maximum amount of security.

As can be seen in FIGS. 6 and 7, upper and lower tracks 38 extend along both elongated sides 39 of the bottom face 40 of main body portion 34. Tracks 38 thus include outwardly extending rail members 41 flush with the elongated side 29 having integral inwardly extending elongated lip or flange members 42 thereon. Thus, tracks 38 are adapted to engage and slide onto the generally T-shaped tracks 18 through 21 of plates 10 and 11, as will be discussed further hereinbelow. It can be seen in FIG. 6 that tracks 38 do not extend along the bottom or short sides of padlock 33.

Referring now to FIG. 7, the bottom face 40 of padlock 33 is shown. The bottom of cylinder 36 terminates in a generally cylindrical plate 43 having a latch-engaging cam member 44 integral therewith. It is to be understood that the turning of the plug 45 (FIG. 5) via a key (not shown) in key-receiving slot 46 will rotate plate 43 and thus cam member 44 between locked and unlocked positions as is well known in the art. Conventional pin tumblers, not shown, may of course be associated with plug 45.

Again referring to FIG. 7, a latch member 47 is shown mounted on face 40 on one side of padlock 33. Latch member 47 is pivotally connected to face 40 by

suitable means, such as a screw 48 connected to face 40. Latch member 47 preferably further includes an integral elongated pin member 49 generally normal thereto extending into an elongated cavity 50 formed in the face 40 of padlock 33. Thus, as latch member 47 pivots about screw 48, pin member 49, carried thereby, moves up and down within cavity 50. A spring 51, a portion of which is shown in dotted lines, is disposed in cavity 50 between the lower wall thereof and pin member 49. The normal unlocked position of cam member 44 and latch member 47 is shown in FIG. 7. In this position, it can be seen that cam member 44 engages a tapered body portion 52 of latch member 47 and holds latch member 47 in a position compressing spring 51. As shown in FIG. 8, when cam member 44 is moved downwardly upon rotation of plate 43, spring 51 biases pin member 49 upwardly, thus moving latch member 47 upwardly. This is the "locked" position of latch member 47. The latch member 47 is restrained between its upper and lower movements by tracks 38. The thickness of latch member 47 is such that it can freely move therein.

Referring now to FIG. 9, padlock 33 is shown in position on base plate 12. This is accomplished by sliding the tracks 38 of padlock 33 over and onto the T-shaped tracks 18 and 19 of plate 10. This interconnection is clearly visible in FIG. 9 and must be carried out, of course, when door 12 is in an open position. Upon closing the door, padlock 33 is slid along tracks 18 and 19 and onto tracks 20 and 21 of plate 11. The final position of padlock 33 on plates 10 and 11 is clearly shown in FIG. 10. The end rail members 28 and 30 of plates 10 and 11, respectively, prevent the disengagement of padlock 33 by means of plate 43 and latch member 47 abutting thereagainst. Finally, the operation of latch member 47 in its working position is shown in solid and dotted lines in FIGS. 1 and 7. Latch member 47 includes, as also shown in FIG. 7, an upwardly extending lip engaging portion 52. As shown, the normal unlocked position of latch member 47 is shown in solid lines (see also FIG. 1). As latch member is locked via cylinder 36, the latch member 47 moves to the upper dotted-line position (see both FIGS. 1 and 7). In this position, it can be seen that, upon movement of padlock 33 to the left, lip-engaging portion 52 would engage the lip portion 32 of extension member 31. Of course, the padlock 33 must be oriented properly on plates 10 and 11; i.e., the side thereof having latch member 47 thereon must be properly aligned on plate 11. Of course, padlock 33 could be moved to the right in FIG. 1; however, latch member 47 would abut against end rail 30 and the remainder of padlock 33 on plate 10 would prevent the opening of door 12. Latch member 47 would remain in its locked position.

Any suitable materials may be used to make my padlock assembly. For example, metallic materials such as stainless steel, brass, tempered steel or any similar solid material may be used. The padlock of my assembly can be quickly and easily removed from or installed on base plates 10, 11. In fact, this can be done with only one hand, if desired, should the user be burdened with packages or the like in his other hand. No hasps, loops or shackles are required which can be easily sawn or cut. If acids or the like were poured on my padlock assembly, such acids would merely roll along the upper surfaces of the tracks and off the assembly and not reach any of the working parts thereof. Also, the top

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and end rails serve to hermetically seal all sides of my padlock assembly. The spring 51 is additionally protected by the walls of cavity 50.

No screws, bolts, hinges or any working parts are presented to view when the padlock of my assembly is locked in place. Thus, conventional slotted hinge plates and the like which can be easily broken are eliminated.

In addition, at least some of the parts of my padlock assembly may include a central core of a high-alumina ceramic material surrounded by the metallic material, such as stainless steel or brass. Such a material, for example, the ceramic material manufactured by the Coors Porcelain Co., 600 Ninth Street, Golden, Colo., has extreme hardness (for example, 1,700-2,000 Knoop, 9 + Mohs) and great mechanical strength (for example, up to 550,000 psi compressive) and thus cannot be cut or drilled through by known means.

Thus, at least the main body portion 34, sides 37 and tracks of padlock 33, may be made of such a combination of materials and the resulting assembly would thus, in addition to eliminating loops, hasps, and shackles or the like, be extremely resistant to both chemical and physical attack. The plates 10 and 11 may be made of tempered steel.

I claim as my invention:

1. A slidably mounted selectively removable padlock assembly comprising:

- a pair of elongated generally flat mating base plates adapted to be mounted on a door jamb, respectively, each of said base plates having track portions in selective alignment in the closed position of said door with respect to said door jamb;
- a generally trapezoidal-shaped padlock having a cen-

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trally located main body portion adapted to slidably engage the track portion of said base plate on said door when said door is in an open position with respect to said door jamb and thereafter slidably engage the track portion of the base plate of said door jamb when said door is in its closed position; a latch associated with said padlock, said latch being entirely enclosed by said padlock when said padlock is slidably mounted on both of said base plates, said latch including a pin integral therewith extending into a cavity in the bottom of said padlock, said pin being normally biased in a direction forcing said latch into its locked position;

a latch moving means associated with said padlock including a key receiving rotatable cylinder disposed in said main body portion of said padlock and having a cam member adapted to engage said latch upon rotation of said cylinder for selectively moving said latch between its locked and an unlocked position; and

a latch engaging member fixedly mounted on the base plate of said door jamb, said latch engaging member being entirely enclosed by said padlock when said padlock is slidably mounted on both of said base plates, said latch engaging member being adapted to engage said latch in its locked position and prevent movement of said padlock off of said base plates when said padlock is slidably mounted on both of said base plates and said latch is in its locked position.

2. The padlock assembly of claim 1 wherein said pin is biased by a spring member disposed in said cavity.

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