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PADLOCK CYLINDER RETAINER

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This invention relates to a padlock construction, and more particularly, to means for retaining within a padlock casing certain of the mechanism inserted as a unit into the casing.

More in detail, my invention relates to a padlock of the type having a shackle, a bolt for locking the shackle, and a key operated locking assembly inserted as a unit into the padlock casing and thereafter retained against removal from the casing. It is the retaining means for retaining the locking assembly in the padlock casing which is the subject of my invention.

It will of course be appreciated that while I show and describe my new and novel retaining means as adapted to hold within the casing the locking assembly, it is capable of holding other component parts of the padlock in position should it be desired to do so. Also, while in this application I shall describe a particular embodiment of my new retainer, it should be understood that my contribution to the art is relatively broad and that I should not be limited to the particular detailed features which are described herein.

Referring now to the drawing, Fig. 1 is a vertical section through a padlock of the pin tumbler cylinder type illustrating my retainer maintaining the cylinder lock assembly within the padlock casing. Fig. 2 is a section along lines 2-2 of Fig. 1. Fig. 3 is a perspective view of my retainer.

Referring now more particularly to the drawing, I show a padlock casing 10 within which is mounted the usual type of pin tumbler shackle 11 projected in an outward direction by a spring 12 when the shackle is released through rotation of a locking bolt 13. The locking bolt 13 is mounted on a stump 15 extending downwardly from the upper portion 16 of the casing 10 and is adapted for rotation into locking position by a spring 14. One end of the spring is designated by reference numeral 17 and fits within a slot in the stump 15 of the casing while the other end 18 fits within a slot 19 of the bolt 13, all as shown in Fig. 1.

Also mounted on the stump 15, and between the casing and bolt 13, is a retainer plate 20 which, when the bolt 13 is rotated to release the shackle 11, cooperates with the surface 21 of the shackle to maintain the shackle against full projection out of the padlock casing 10 by the spring 12.

The locking bolt 13 is rotated by a lug 22 extending from and forming an integral part of the pin tumbler key plug 23. The pin tumbler key plug 23 is itself mounted within and forms part of the pin tumbler cylinder locking assembly 24, and is retained therein by the plug retainer 25.

Those skilled in the art will appreciate that the construction so far described is conventional, it being usual to have an assembly of parts as illustrated, and with the pin tumbler cylinder and its key plug retained within a padlock casing. The types of retainers heretofore used for holding locking assemblies within padlock casings are varied in form, and are of course understood by those skilled in the art.

I have conceived and reduced to practice a type of retainer best illustrated in Fig. 3, and there designated by reference numeral 26. This retainer is made of spring steel stock formed as illustrated, with two bowed portions 27 and 28, and end retaining surfaces 29 and 30. The retaining surface 29 cooperates with the surface 31 formed in the locking cylinder assembly 24 by the cutting away of a portion of the cylinder, as designated by the reference numeral 32. The end surface 30 of the retainer 26 cooperates with the surface 33 forming the bottom of a slot 34 which is cast or machined on the inside surface of the casing 10, as is best illustrated in Fig. 2.

The retaining action of the retainer 26 will best be understood if the mode of assembly of my pin tumbler cylinder locking assembly 24 within the padlock casing 10 is described. With the shackle in its dash and dot position illustrated in Fig. 1, the pin tumbler locking assembly 24 is inserted within the casing into the position of Fig. 1 and with the surface 35 of the assembly limiting the extent of insertion thereof into the casing 10. Since, with the shackle 11 in its dash and dot position the shackle bore 36 is open, it is possible to drop the retainer 26 through the bore 36 and into the groove 34. Because the retainer 26 is made of spring steel, proper pressure exerted thereagainst will bring its bowed portions 27 and 28 against the casing 10 and locking assembly 24, respectively, while its upper end will snap into the cut away portion 32 in the locking assembly, bringing the retainer surface 29 thereof against the surface 31 of the locking assembly 24. This is of course the position of the parts in Fig. 1. The shackle 11 may now be inserted and locked in the usual manner understood by those skilled in the art.

With the parts in the position of Fig. 1, it is obvious that because the surfaces 33 and 31 of the casing and the locking assembly, respectively, are diagonally related, the retainer 26 will tend to maintain the cylinder locking assembly against endwise movement out of the casing and will further press the assembly to the right, thus taking
up any play between the locking assembly and the casing. Moreover, the bowed portions 27 and 28 will cooperate with the locking assembly and casing to retain the parts in the position set forth, and to further assist in the maintaining of the retainer 26 under proper operating tension to prevent any looseness or rattling of the padlock parts.

Those skilled in the art will readily appreciate that any form of retainer assembly is extremely inexpensive to manufacture, inexpensive to insert into retaining position, while functioning to yield results considerably superior to those available through the use of more expensive and more complicated types of retainers.

I now claim:

1. In a lock of the class described, a padlock casing, a locking assembly inserted into said casing, and a retainer bar mounted in a recess internal of said casing and extending between said assembly and said casing and having one end thereof bearing against a retaining shoulder formed on said assembly and its other end bearing against a surface of said casing recess whereby an attempt to pull said assembly endwise out of the casing will tend to buckle said retainer bar.

2. In a lock of the class described, a casing, a locking assembly inserted into said casing, and a retainer bar in said casing extending between said assembly and said casing and having one end thereof bearing against a surface of said assembly and its other end against a surface of said casing whereby an attempt to pull said assembly endwise out of the casing will tend to buckle said retainer bar, said retainer bar having surfaces thereof extending also against additional surfaces of said assembly and casing to resist buckling of said retainer.

3. In a lock of the class described, a casing, a locking assembly inserted into said casing, a spring-like retainer bar extending between said assembly and casing and having one end bearing against a surface of said assembly and its other end against a surface of said casing, and with said bar somewhat flexed endwise whereby to exert endwise pressure tending to press said assembly inwardly of said casing.

4. In a lock of the class described, a casing, a locking assembly inserted into said casing, a spring-like retainer bar extending between said assembly and casing and having one end bearing against a surface of said assembly and its other end against a surface of said casing, and with said bar somewhat flexed endwise whereby to exert endwise pressure tending to press said assembly inwardly of said casing and side pressure tending to press said assembly to one side of said casing.

5. In a lock of the class described, a casing, a locking assembly inserted into said casing, a retainer bar of spring-like material extending between said assembly and casing and having one end bearing against a surface of said assembly and its other end against a surface of said casing, and with said bar somewhat flexed endwise whereby to exert endwise pressure tending to press said assembly inwardly of said casing, and stop means for limiting the degree of endwise movement of said assembly inwardly of said casing.

6. In a padlock of the class described, a casing, a locking assembly inserted into said casing, a retainer bar of spring-like material extending lengthwise between said locking assembly and said casing and with the ends of said bar against opposed retaining surfaces of said locking assembly and casing, bowed portions formed on said retainer bar intermediate its ends and cooperating with surfaces of said casing and locking assembly whereby said retainer bar is maintained under endwise tension between said opposed retaining surfaces to press said assembly inwardly of said casing.

7. In a padlock of the class described, a casing, a locking assembly inserted into said casing, a retainer bar of spring-like material extending lengthwise between said locking assembly and said casing and with the ends of said bar against diagonally opposed retaining surfaces of said locking assembly and casing, bowed portions formed on said retainer bar intermediate its ends and cooperating with surfaces of said casing and locking assembly whereby said retainer bar is maintained under endwise tension between said diagonally opposed retaining surfaces to press said assembly inwardly to one side of said casing.

8. In a padlock of the class described, a casing, a locking assembly inserted into said casing, a retainer bar of spring-like material extending lengthwise between said locking assembly and said casing and with the ends of said bar against diagonally opposed retaining surfaces of said locking assembly and casing, and with said bar somewhat flexed endwise whereby to exert endwise pressure tending to press said assembly inwardly of said casing and side pressure tending to press said assembly to one side of said casing.

9. In a padlock of the class described, a casing, a locking assembly inserted into said casing, a retainer bar of spring-like material extending lengthwise between said locking assembly and said casing and with the ends of said bar against diagonally opposed retaining surfaces of said locking assembly and casing, and with said bar somewhat flexed endwise whereby to exert endwise pressure tending to press said assembly inwardly of said casing and side pressure tending to press said assembly to one side of said casing.

10. In a padlock of the class described, a casing, a locking assembly inserted into said casing, a retainer bar of spring-like material extending lengthwise between said locking assembly and said casing and with the ends of said bar against diagonally opposed retaining surfaces of said locking assembly and casing, and with said bar somewhat flexed endwise whereby to exert endwise pressure tending to press said assembly inwardly of said casing and side pressure tending to press said assembly to one side of said casing.

11. In a padlock of the class described, a casing having a shackle opening and a chamber in one side of said casing and said chamber opening for housing a locking assembly insertible into said chamber, opposed retaining surfaces formed on a surface of said chamber and on a surface of said locking assembly, and a spring-like retainer member insertible through said shackle opening with one bearing against said chamber surface while another portion thereof is sprung into a position bearing against said locking assembly surface to prevent outward movement of said locking assembly from said casing.

12. In a padlock of the class described, a casing
having a shackle opening and a chamber in communication with said shackle opening for housing a locking assembly insertible into said chamber, opposed retaining surfaces formed on a surface of said chamber and on a surface of said locking assembly, and a retainer bar of spring-like material insertible through said shackle opening with one end thereof bearing against said chamber surface while the other end thereof bears against said locking assembly surface, and with said bar somewhat sprung when its end portions are so positioned.

13. In a lock of the class described, a casing, a locking assembly inserted into said casing, a spring-like retainer member extending between said assembly and casing and having one portion thereof bearing against a surface of said assembly and another portion thereof bearing against a surface of said casing, and with said member somewhat flexed whereby to exert pressure tending to press said assembly inwardly of said casing.

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