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E. B. STONE

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PADLOCK

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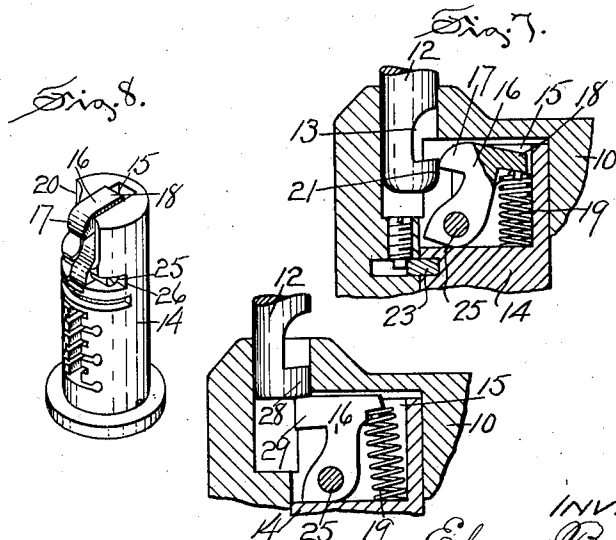
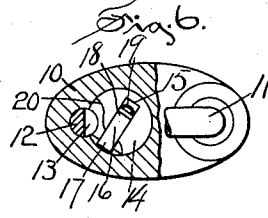
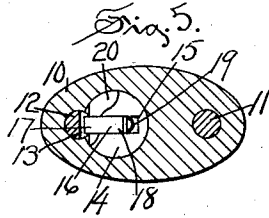
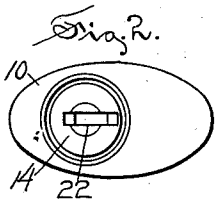
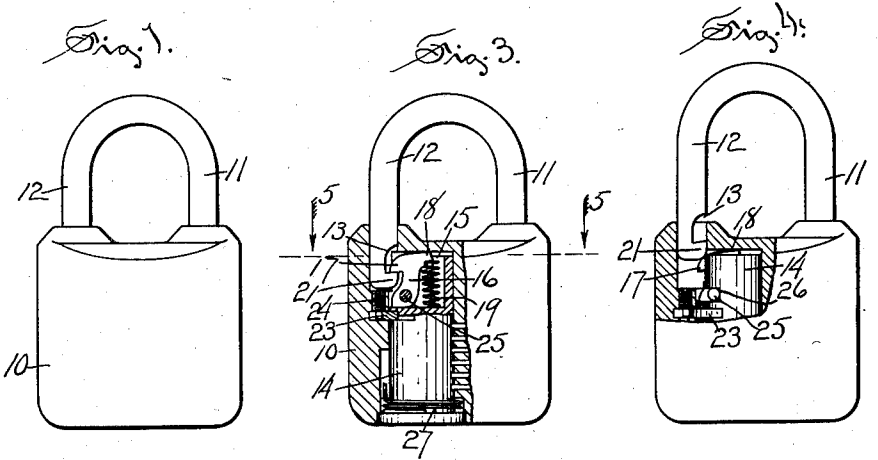


Fig. 9

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# UNITED STATES PATENT OFFICE

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## PADLOCK

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8 Claims. (Cl. 70—108)

My invention relates more particularly to the class of locks above mentioned, and an object of the invention, among others, is the production of a lock of this type that shall be durable in construction and particularly efficient for the purpose for which it is designed.

One form of a padlock embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained, is illustrated in the accompanying drawing in which—

Figure 1 is a side view of my improved lock.

Figure 2 is an end view of the same.

Figure 3 is a side view with parts, including the plug, broken away to show construction.

Figure 4 is a similar view but illustrating the plug unbroken.

Figure 5 is a view in section on a plane denoted by the dotted line 5—5 of Figure 3.

Figure 6 is a view partially broken away to show construction, the plug being shown as turned to unlocking position.

Figure 7 is a view on enlarged scale in section through the upper end of the plug illustrating the mounting for a locking bolt.

Figure 8 is an isometric view of the key plug.

Figure 9 is a fragmentary view showing the application of my invention to the so-called "dead bolt" type of lock.

In the accompanying drawing the numeral 10 denotes the case of my improved padlock that may be composed of any suitable material with an opening for the long arm 11 of the shackle and an opening on the opposite side of the case for the short arm or leg 12 of the shackle, the long arm or leg 11 being provided with any suitable means for preventing its removal from the case and also being provided with any suitable means for forcing it outwardly to unlocking position in a manner common to padlocks as heretofore constructed. The short leg of the shackle has a notch 13 to receive a locking bolt to be hereinafter described.

A key plug 14 is rotatably mounted in the case, its rotating movement being effected as by means of a key inserted in a key slot extending lengthwise within the plug as is common in structures of this type, rotation of the plug being controlled in any suitable manner, as by means of leaf or pin tumblers or the like, such tumblers not being specifically shown herein. This plug has a recess 15 formed in its inner end, such recess being in the form of a notch extending diametrically within the plug and inwardly lengthwise thereof from the inner end thereof, as shown in Fig.

7 of the drawing. A bolt 16 is pivotally mounted within said notch, said bolt having a locking nose 17 on one side to engage within the notch 13 in the short leg of the shackle, and a spring engaging lip 18 on the opposite side to receive one end of a spring 19 which thrusts at one end against the bottom of the recess 15 and at its opposite end against the lip 18, as shown in Fig. 3 of the drawing. The plug 14 is cut away at its inner end, as at 20, to permit it to be turned to avoid the end of the shackle when the latter is in its locked position, as shown in Fig. 6.

The end of the short leg 12 of the shackle is beveled on one side and the upper side of the nose 17 is also beveled so that when the shackle is pushed into the case in a locking movement engagement of said beveled surfaces will cause the bolt 16 to be swung backwardly to permit the entrance of said shackle arm, and when the lip 21 formed by the notch has passed the nose 17 the locking bolt will spring into locking position to retain the shackle from unlocking movement. To release the shackle a key is inserted in the key groove 22 in the plug to place the tumblers in releasing positions, and the plug being then turned by means of the key the nose 17 is passed laterally from engagement with the lip 21, and the shackle, by reason of the spring engaging the long leg, as in a manner common to padlocks of this type and hereinbefore described, is forced outwardly to unlocking position, and as shown in Fig. 4 of the drawing.

The plug may be held in place in the case as by means of a key 23 extending into a notch in the side of the plug, as shown in Fig. 3, said key being secured as by means of a screw 24 in a threaded hole which opens into the notch in which the key is located, said notch opening from the plug socket in the case. The screw is located in line with the hole that receives the short leg of the shackle so that said screw may be manipulated as by means of a screw-driver extended into said hole.

The pivot 25 for the bolt 16 may be extended laterally from the bolt into a pivot notch 26 cut into the front side of the plug, and as shown in Fig. 8. The pivot is loosely retained in said notch, but the action of the spring 19 is such that the bolt is retained in place when the plug is out of the case, and the wall of the hole in which the plug is located retains the bolt in place when the parts are assembled. A spring 27 surrounding the plug 14 with one end attached to the plug and the other end engaged within a groove in the wall of the plug opening in the case may be employed to

return the plug to locking position after it has been rotated therefrom.

In Fig. 9 I have shown my invention as applied to the so-called "dead bolt" type of lock, that is a lock in which the shackle cannot be engaged with the bolt until the latter has been removed from the path of the former as by rotation of the key plug. This structure is the same as that hereinbefore described with the exception that the lip 28 on the short leg of the shackle is unbevelled as is also the nose 29 on the bolt 16, so that said lip cannot be forced past said nose by pushing the latter back, and the plug 14 must therefore be turned to effect a locking operation.

In accordance with the provisions of the patent statutes I have described the principles of operation of my invention, together with the device which I now consider to represent the best embodiment thereof; but I desire to have it understood that the device shown is only illustrative and that the invention may be carried out by other means and applied to uses other than those above set out.

I claim:

1. A padlock including a case, a shackle movably mounted in the case and having a short leg to project into the case, said leg having a locking lip, a plug rotatably mounted in the case, and a locking bolt mounted on a horizontally arranged pivot carried by said plug to swing in a vertical plane to engage said locking bolt.

2. A padlock including a case, a shackle movably mounted in the case and having a short leg to project into said case, said leg having a locking lip, a key plug rotatably mounted in the case, and having a narrow recess opening inwardly from one end of the plug from one side thereof, and a locking bolt mounted on a horizontal pivot extending across said recess near the bottom thereof to swing in a vertical plane to engage said lip.

3. A padlock including a case, a shackle movably mounted in the case and having a short leg to project into said case, said leg having a locking lip, a key plug rotatably mounted in the case, and a locking bolt pivotally mounted at its lower end in a recess in the inner end of said plug, said bolt having a locking nose at its upper end to engage said short leg of the shackle and also having a spring engaging lip projecting from the side opposite said locking nose, and a spring engaged with said lip.

4. A padlock including a case, a shackle movably mounted in the case and having a short leg to extend into the case, said leg having a locking lip, a plug rotatably mounted in the case, and a locking bolt pivotally carried by said plug to swing in a vertical plane and having a laterally extend-

ing locking nose arranged on said plug to engage with and disengage from said locking lip during the rotary movement of said nose with said plug.

5. A padlock including a case, a shackle movably mounted in the case and having a short leg to project into said case, said leg having a locking lip, a plug rotatably mounted in the case and having a recessed notch in its inner end, a locking bolt pivotally mounted at its lower end near the bottom of said notch and having a locking nose projecting from one side at its upper end and a spring engaging lip projecting in the opposite direction from said nose, and a spring seated against the bottom of said notch to press with its upper end against said lip to thrust said nose into engagement with said locking lip on the short arm of the shackle.

6. A padlock including a case, a shackle movably mounted in the case and having a short leg to project into said case, said leg having a locking lip, a plug rotatably mounted in the case and having a recessed notch in its inner end, a locking bolt pivotally mounted at its lower end near the bottom of said notch and having a locking nose projecting from one side at its upper end and a spring engaging lip projecting in an opposite direction from said nose, said plug being cut away on one side to avoid the end of said short arm as the plug is rotated, and a spring seated against the bottom of said notch and pressing with its upper end against said lip to thrust said nose into engagement with said locking lip on said short arm.

7. A padlock including a case having a vertically extending hole for the short arm of a shackle, a shackle movably mounted in the case and having a short arm to extend into said hole, a plug rotatably mounted in the case, a locking bolt mounted on said plug to engage a locking lip on the short arm of said shackle, and a pivot extending laterally from said bolt into a notch cut into said plug from the outer side thereof for the reception of said pivot.

8. A padlock including a case, a shackle movably mounted in the case and having a short leg to project into said case and having a locking lip, a key plug rotatably mounted in the case and having a recess opening inwardly from its inner end and a notch cutting across and intersecting said recess, and a locking bolt mounted in said recess and having a pivot extending laterally therefrom and engaged in said notch, said bolt having a nose to engage said locking lip on the short leg of the shackle.

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