Nov. 9, 1965 M. P. FALK 3,216,230

PICK RESISTANT LOCK

Filed Dec. 5, 1963

FIG. 1

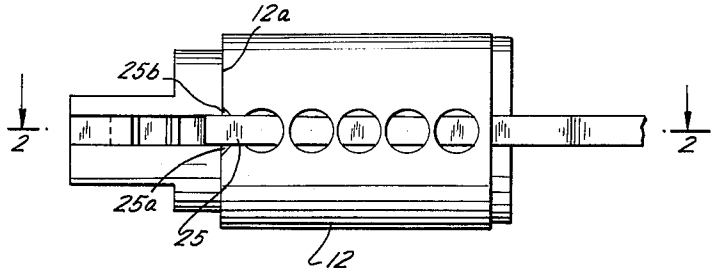


FIG. 2

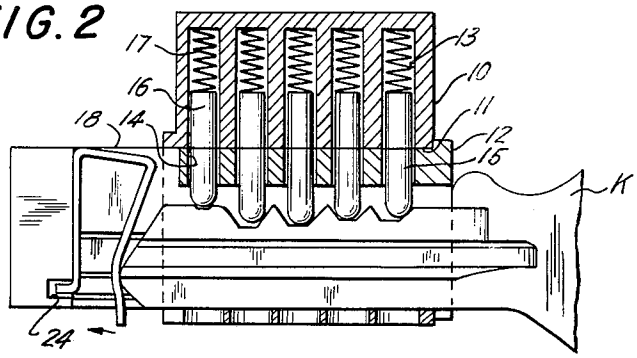


FIG. 3

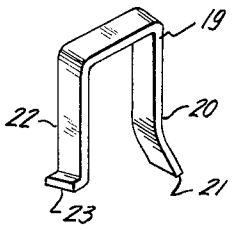
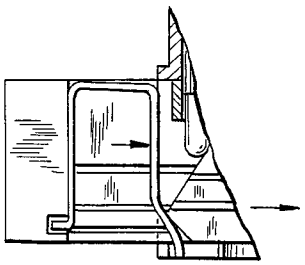


FIG. 4



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PICK RESISTANT LOCK

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2 Claims. (Cl. 70—421)

This invention relates to an anti-pick lock device, and more particularly to a lock device which is resistant to tampering or picking of a particular form known as "riffling."

Riffling represents a method of picking a lock which entails applying a constant torque to the lock plug while causing the locking pins to be shifted back and forth across the shear line. The technique is effective because the application of torque as aforesaid causes the cross bores of the plug to be shifted slightly out of registry with the cross bores of the casing due to the clearance provided between the pins and the bores. With the parts slightly out of registry, the lower edges of the driver pins tend to "hang" or be engaged against the outer periphery of the plug and not enter the plug bores. When all the driver pins become thus hung or engaged, the plug may be freely rotated.

Accordingly, a primary object of the present invention is to provide a lock mechanism which is resistant to picking by the riffling method. A further object of the invention is to provide a lock of the class described having novel means independent of the locking pins or wafers for maintaining the cross bores, the plug and the casing in registry and thereby foiling picking of the lock through the riffling method, by preventing a condition in which the driver pins may hang.

Still a further object of the invention resides in providing a pick resistant lock device with means independent of the locking pins for keeping the tumbler bores of the plug and casing in precise alignment except when a proper key is inserted into the keyway.

To attain these objects and such further objects as may appear herein or be hereinafter pointed out, I make reference to the accompanying drawing, forming a part hereof, in which:

FIGURE 1 is a bottom view of a lock in accordance with the invention.

FIGURE 2 is a vertical section taken on the line **2—2** of FIGURE 1;

FIGURE 3 is a perspective view of the spring for aligning the plug and casing;

FIGURE 4 is a fragmentary view similar to FIGURE 2 with the key in a partially inserted position.

Reference will now be made to the drawings wherein there is provided the usual lock casing **10**, having rotatably mounted in a bore **11** therein, a plug **12**. The plug **12** is rotatable within the bore but is limited in respect of longitudinal movement by any suitable means (not shown). The casing is, in the usual manner, provided with a series of cross bores **13** which, in the locked position of the mechanism, are aligned with cross bore extensions **14** formed in the plug **12**. Movably mounted within the bores and bore extensions there are disposed follower pins **15** and driver pins **16**, the latter being inwardly radially pressed by coiled springs **17** biased between driver pins **16** and portions of the casing **10**.

In the locked position, the springs press the follower pins **15** entirely, and the driver pins **16** partly, into the plug **12** whereby rotation of the plug with respect to the casing is prevented by the straddling driver pins.

The plug **12** is provided with a recess **18** which preferably extends generally parallel with the keyway of the plug. Within the recess **18** there is mounted a spring member **19**, which spring member, in the illustrated embodiment, is generally U-shaped in configuration. The spring member **19** includes a branch **20** having a terminal end **21** which flares or extends forwardly toward the outer end of the lock. The opposite branch **22** may be provided with an outwardly directed retainer portion **23** which, in the inserted position of the spring in the plug, is seated within the longitudinally extending recess **24** in the plug, thereby to maintain the spring **19** in the plug.

The rearmost end **12***a* of the casing **12**, at a point opposite the cross bores **13**, is formed to define a slot or groove **25**. Preferably the entrance portions **25***a*, **25***b* of the slot **25** are tapered slightly, to be broader at the actual end portion **12***a* of the casing than at a point inwardly thereof.

In the locked position of the plug, the flared portion **21** of the spring **19** is based by the action of said spring into slot **25** in the casing. Preferably the transverse dimension of the portion **21** of the spring closely matches the comparable transverse dimension of the inner end of the slot **25**, whereby in the inwardly biased position of the spring in said slot, relative rotation between the plug and the casing is prevented or limited to an insignificant degree due to the close tolerances of the parts **21** and **25**.

The branch **20** of the spring, as best seen in FIGURES 2 and 4, lies within an extension of the keyway of the plug and directly in the path of movement of a key as the latter is inserted into the plug.

By comparing FIGURES 2 and 4 it will be seen that the nose of a fully inserted key K, FIGURE 2, will engage the branch **20** and cause the portion **21** to be shifted rearwardly clear of the slot **25**. As the key is withdrawn, see FIGURE 4, the branch **20** will be released and thereby permit the portion **21** to reenter the slot. The cammed or tapered entry portions **25***a*, **25***b* of the slot cooperate with the released spring portions to "right" or orient the plug and casing so that the axes of the cross bore extensions of the plug are brought into registry with the axes of the casing.

It will be observed that should an attempt be made to riffle a lock in accordance with the invention, the attempt will be unsuccessful since the extension **21** of the spring which engages within the slot **25** of the plug will prevent any significant disorientation of the plug and casing, thereby eliminating the possibility of a driver pin hanging on a disoriented portion of the plug. This effect is assured since the tolerances between the pins and the cross bores exceed the transverse tolerance between the extension **21** and the slot **25**. When a proper key K is inserted into the keyway of the plug, the nose of the key shifts the branch **20** rearwardly, eliminating any impediment to rotation theretofore provided by the spring **19** engaging the lock casing.

Riffling of the lock is thus prevented by means of a spring which maintains the plug and casing in alignment independently of the locking pins.

While the illustrated embodiment shows a particular form of spring carried in the forwardmost edge of the lock plug, the invention is not limited to such a spring form or location. Rather, the invention is to be broadly construed within the scope of the appended claims to include a variety of spring forms and locations, the inventive concept broadly encompassing spring means which align the plug and casing except in the fully inserted position of the key in the keyway, the key, when fully inserted, serving to release the spring means.

Having thus described the invention and illustrated its use, what is claimed as new and is desired to be secured by Letters Patent is:

1. In a pick resistant lock including a housing member, a plug member rotatably mounted therein and having

a keyway, and locking means in said plug and housing members shiftable between locking and unlocking positions of said plug member, a spring carried by one said member, a locking notch formed in the other said member, a portion of said spring being biased into said notch to limit relative rotation of said plug and housing members, said spring including an abutment part disposed in said keyway, and a key for operating said locking means insertible into said keyway, said key, in the fully inserted position, including portions engaging the abutment part of said spring, thereby to compress said spring and hold said locking part of said spring clear of said notch.

2. A pick resistant lock mechanism comprising a housing having a main bore, a plug rotatably mounted in said bore and having a longitudinally extending keyway, locking members movably mounted in said housing and said plug and shiftable between locking and unlocking positions of said plug, a recess in the inner end of said plug communicating with said keyway, a spring member in said recess having a branch biased toward the outer end of said housing and disposed in blocking position of said keyway, a locking portion on said branch extending

radially beyond said plug, a notch in said housing into which said locking portion is yieldably biased to limit rotary movement of said plug in said housing, and key means bitted to shift said locking members to unlocking position of said plug, said key means having a tip portion engaging said branch of said spring and urging said locking portion clear of said notch in the fully inserted position thereof.

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