LOCK ASSEMBLY WITH MOVABLE ELEMENT

FIELD OF THE INVENTION

The present invention relates to locking apparatus generally and more particularly to a lock assembly with a movable element that aligns with a shear line only upon movement of a plug in a lock body.

BACKGROUND OF THE INVENTION

As is well known in the art, cylinder locks generally include a plug (also called tumbler) arranged for rotation in a cylinder lock housing. Plug pins are slidingly disposed in the plug and are arranged to move against driver pins, which are disposed in bores formed in the cylinder lock housing and are spring biased toward the axis of the plug rotation. Insertion of a properly cut key in a keyway provided in the plug moves the plug pins against the driver pins and aligns all the pins along a shear line defined by the plug outer circumference, thereby permitting rotation of the plug to cause operation of a latch or locking mechanism.

In the prior art, insertion of the key brings all the plug pins to the shear line before rotation of the plug.

SUMMARY OF THE INVENTION

Embodiments of t~~T~~he present invention seek~~s~~ to provide a novel lock assembly with a movable element that aligns with the shear line only upon movement of the plug in the lock body, as is described more in detail hereinbelow.

There is thus provided in accordance with an aspect~~embodiment~~ of the present invention a lock assembly comprising a key comprising a shaft portion and at least one movable key combination element retained within said shaft portion; and~~including~~ a plug having a keyway for inserting therein said~~a~~ key, the plug arranged for movement in a bore formed in a lock body along a shear line defined between an outer perimeter of the plug and an inner perimeter of the bore, said plug having at least two movable elements, wherein when said key is fully inserted in said keyway, said at least one movable key combination element protrudes beyond an outer surface of said shaft portion only upon movement of said plug in said lock body~~and at least one movable element slidingly disposed in an opening formed in the plug, wherein insertion of the key in the keyway without movement of the plug in the lock body does not align the at least one movable element with the shear line, but movement of the plug in the lock body (for example, rotation of the plug about a rotation axis) with the key inserted in the keyway aligns the at least one movable element with the shear line~~.

There is also disclosed~~provided in accordance with an embodiment of the present invention~~ a lock assembly including a key including a shaft portion and at least one movable key combination element retained within the shaft portion, and a plug having a keyway for inserting therein the key, the plug arranged for movement in a bore formed in a lock body along a shear line defined between an outer perimeter of the plug and an inner perimeter