CLAIMS

What is claimed is:

1. A lock assembly comprising:

a key comprising a shaft portion and at least one movable key combination element retained within said shaft portion; and

a plug having a keyway for inserting therein said key, said plug arranged for movement in a bore formed in a lock body along a shear line defined between an outer perimeter of said plug and an inner perimeter of said 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.

2. The lock assembly according to claim 1, wherein said movable elements comprise first and second movable elements located in openings formed in said plug on different sides of said keyway.

3. The lock assembly according to claim 1, further comprising at least one plug pin slidingly disposed in a plug bore formed in said plug, wherein insertion of said key in said keyway without movement of said plug in said lock body aligns said at least one plug pin with said shear line.

4. The lock assembly according to claim 1, wherein said movable elements are not spring-loaded or biased in said plug.

5. The lock assembly according to claim 1, wherein a portion of said movable elements is received in a recess formed in said lock body and moves out of said recess upon the movement of said plug in said lock body.

6. The lock assembly according to claim 5, wherein said recess is relatively wide facing said plug and tapers to a narrower width in a direction away from said plug, said portion of said movable elements having a complementary-tapered shape to fit in said recess.

7. The lock assembly according to claim 1, wherein said movable elements comprise a base and a protrusion protruding from said base towards said shear line, and wherein a centerline of said base is offset from a centerline of said plug.

8. The lock assembly according to claim 2, wherein a portion of said first movable element is received in a recess formed in said lock body and moves out of said recess upon the movement of said plug in said lock body, and wherein said opening in which

said second movable element is disposed is formed with a counterbore facing said shear line and opposite to said recess.

9. The lock assembly according to claim 2, wherein said first and second movable elements touch opposite sides of said at least one movable key combination element when said key is inserted in said keyway.

10. The lock assembly according to claim 2, wherein said second movable element is arranged to move against a driver pin slidingly disposed in said lock body, said driver pin applying a biasing force towards said second movable element, and wherein said driver pin extends into said opening when said key is inserted in said keyway and moves out of said opening only upon said movement of said plug in said lock body.

11. The lock assembly according to claim 8, wherein said second movable element is arranged to move against a driver pin slidingly disposed in said lock body, said driver pin applying a biasing force towards said second movable element, and wherein said driver pin extends into said counterbore when said key is inserted in said keyway before said plug moves in said lock body, and wherein upon said movement of said plug in said lock body, said first movable element moves against said at least one movable key combination element, which moves against said second movable element, which moves against said driver pin, overcoming said biasing force and causing said driver pin to move out of said counterbore to permit rotation.

CLAIMS

What is claimed is:

1. A lock assembly (10) comprising:

a plug (12) having a keyway (14) for inserting therein a key (16), said plug (12) arranged for movement in a bore (18) formed in a lock body (20) along a shear line (24) defined between an outer perimeter of said plug (12) and an inner perimeter of said bore (18);

characterised in that at least one movable element (26, 28) is slidingly disposed in an opening formed in said plug (12), wherein insertion of said key in said keyway (14) without movement of said plug (12) in said lock body (20) does not align said at least one movable element (26, 28) with said shear line (24), but movement of said plug (12) in said lock body (20) with said key (16) inserted in said keyway (14) aligns said at least one movable element (26, 28) with said shear line (24).

2. A lock assembly (10) comprising:

a key (16) comprising a shaft portion (56) and at least one movable key combination element (58) retained within said shaft portion (56); and

a plug (12) having a keyway (14) for inserting therein said key (16), said plug (12) arranged for movement in a bore (18) formed in a lock body (20) along a shear line (24) defined between an outer perimeter of said plug (12) and an inner perimeter of said bore (18),

wherein when said key (16) is fully inserted in said keyway (14), said at least one movable key combination element (58) protrudes beyond an outer surface of said shaft portion (56) only upon movement of said plug (12) in said lock body (20).

3. The lock assembly (10) according to claim 1, wherein said at least one movable element (26, 28) comprises first and second movable elements (26, 28) located in openings (30, 32) formed in said plug (12) on different sides of said keyway (14).

4. The lock assembly (10) according to claim 1 or claim 2, further comprising at least one plug pin (60) slidingly disposed in a plug bore formed in said plug (12), wherein insertion of said key (16) in said keyway (14) without movement of said plug (12) in said lock body (20) aligns said at least one plug pin (60) with said shear line (24).

5. The lock assembly (10) according to claim 1, wherein said at least one movable element (26, 28) is not spring-loaded or biased in said plug (12).

6. The lock assembly (10) according to claim 1, wherein a portion of said at least one movable element (26, 28) is received in a recess (44) formed in said lock body (20) and moves out of said recess (44) upon the movement of said plug (12) in said lock body (20).

7. The lock assembly (10) according to claim 6, wherein said recess (44) is relatively wide facing said plug (12) and tapers to a narrower width in a direction away from said plug (12), said portion of said at least one movable element (26, 28) having a complementary-tapered shape to fit in said recess (44).

8. The lock assembly (10) according to claim 1, wherein said at least one movable element (26, 28) comprises a base (34) and a protrusion (36) protruding from said base (34) towards said shear line (24), and wherein a centerline of said base (34) is offset from a centerline of said plug (12).

9. The lock assembly (10) according to claim 3, wherein a portion of said first movable element (26) is received in a recess (44) formed in said lock body (20) and moves out of said recess (44) upon the movement of said plug (12) in said lock body (20), and wherein said opening (32) in which said second movable element (28) is disposed is formed with a counterbore (46) facing said shear line (24) and opposite to said recess (44).

10. The lock assembly (10) according to claim 1, wherein said key (16) comprises a shaft portion (56) and at least one movable key combination element (58) retained within said shaft portion (56), said at least one movable element (26, 28) touching said at least one movable key combination element (58) when said key (16) is inserted in said keyway (14).

11. The lock assembly (10) according to claim 3, wherein said key (16) comprises a shaft portion (56) and at least one movable key combination element (58) retained within said shaft portion (56), and wherein said first and second movable elements (26, 28) touch opposite sides of said at least one movable key combination element (58) when said key (16) is inserted in said keyway (14).

12. The lock assembly (10) according to claim 3, wherein said second movable element (28) is arranged to move against a driver pin (48) slidingly disposed in said lock body (20), said driver pin (48) applying a biasing force towards said second movable element (28), and wherein said driver pin (48) extends into said opening (32) when said key (16) is inserted in said keyway (14) and moves out of said opening (32) only upon said movement of said plug (12) in said lock body (20).

13. The lock assembly (10) according to claim 9, wherein said second movable element (28) is arranged to move against a driver pin (48) slidingly disposed in said lock body (20), said driver pin (48) applying a biasing force towards said second movable element (28), and wherein said driver pin (48) extends into said counterbore (46) when said key (16) is inserted in said keyway (14) before said plug (12) moves in said lock body (20), and wherein upon said movement of said plug (12) in said lock body (20), said first movable element (26) moves against said at least one movable key combination element (58), which moves against said second movable element (28), which moves against said driver pin (48), overcoming said biasing force and causing said driver pin (48) to move out of said counterbore (46) to permit rotation.