May 28, 1940. S. BRAUNE 2,202,329

ANTIPICK LOCK

Filed July 13, 1939

Fig. 1.

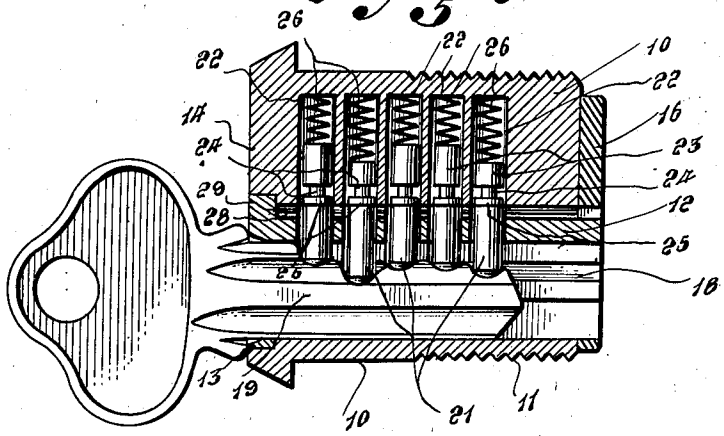


Fig. 2.

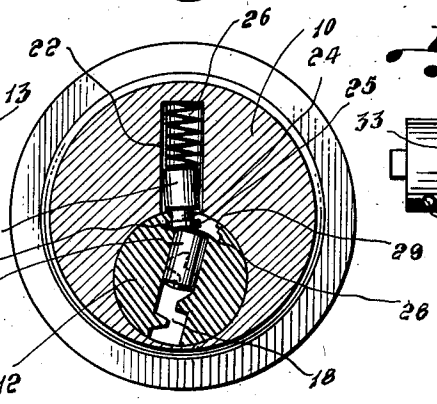


Fig. 4.

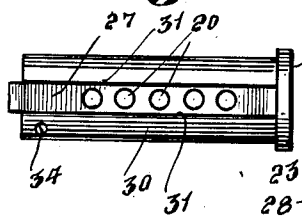


Fig. 5.

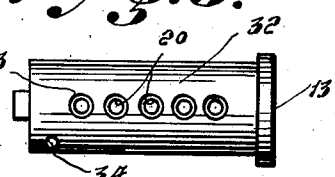
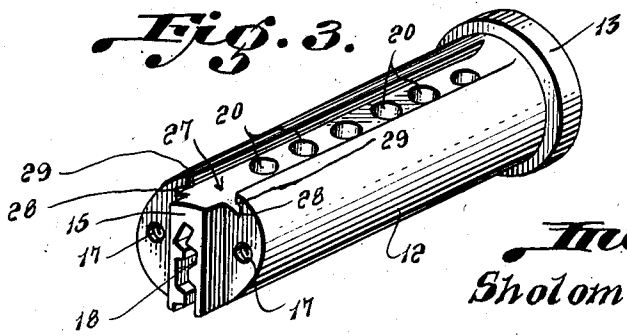


Fig. 3.



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ANTIPICK LOCK

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8 Claims. (Cl. 70—419)

This invention relates to certain new and useful improvements in antipick lock.

The primary object of the invention is to provide a key plug normally restrained against rotation within a lock cylinder by means of tensioned co-acting driver pins and pin tumblers with the driver pins and rotatable key plug cooperatively constructed to prevent unauthorized or surreptitious operation or picking of the lock in the absence of the proper operating key therefor.

A further object of the invention is to provide a pick-proof lock of the foregoing character embodying a cylinder rotatably housing a key plug with tensioned top driver pins coacting with pin tumblers to restrain the key plug from rotation, the cylinder and key plug having registering holes therein for the mounting of the driver and pin tumblers, the side of the key plug through which the holes extend being longitudinally flattened or milled to provide a flat surface at each side of the tumbler pin hole and an over-hanging side shoulder for interlocking engagement with a mushroom-type driver pin to prevent rotation of the key plug to the releasing position of the lock bolt.

With the above and other objects in view that will become apparent as the nature of the invention is better understood, the same consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawing and claimed.

In the drawing:

Figure 1 is a longitudinal sectional view of a pick-proof lock constructed in accordance with the present invention, a key being illustrated as positioned in the key plug and the tensioned driver pins and tumbler pins forming a part of the lock mechanism being positioned to permit rotation of the key plug;

Figure 2 is a vertical cross-sectional view of the lock structure shown in Figure 1, the key being removed, the key plug being partly rotated with a mush-room-type driver pin interlockingly engaged with the side shoulder or flange bordering a longitudinally milled portion on the side of the key plug;

Figure 3 is an enlarged perspective view of the key plug removed from the cylinder and illustrating the milled side of the plug through which the tumbler openings extend and illustrating a longitudinally extending overhanging flange at each side of the milled surface;

Figure 4 is a top plan view on a reduced scale of another form of key plug having tumbler pin openings and a milled surface with a longitudinally split bearing sleeve surrounding the plug with the split ends thereof terminating at opposite edges of the milled surface; and

Figure 5 is a top plan view of another form of key plug having the tumbler pin openings and a milled surface with the plug inclosed by a sleeve having openings therein of a diameter larger than and respectively registering with the tumbler pin openings.

Referring more in detail to the accompanying drawing and particularly Figures 1 to 3, there is illustrated a lock comprising a cylinder 10 having an externally threaded portion 11 to facilitate mounting thereof in a structure with which the lock is to be associated, the cylinder 10 having a bore therein for the rotatable reception of a key plug 12. The forward end of the key plug 12 is provided with an enlarged annular flange 13 cooperating with the walls of a recess formed in the front wall 14 of the cylinder 10 to limit inward movement of the key plug in the cylinder, the inner or rear end of the key plug 12 projecting beyond the inner end of the cylinder 10 and carrying a substantially rectangular block projection 15 for the mounting of a laterally directed locking arm or bolt 16, that is movable over the inner end of the cylinder 10 as will be readily understood from an inspection of Figure 1, with the lock bolt retained in position on the key plug 12 by means of screws or the like passed therethrough and entering threaded openings 17 in the inner end of the key plug 12.

The key plug 12 has a longitudinally extending key slot 18 extending completely through the same, the side walls of the key slot being ribbed and grooved in a conventional manner for the mating reception of the shank 19 of an operating key for the lock and said key plug further has a longitudinally extending series of radially directed holes 20 therein opening at one side of the key plug 12 and communicating with the key slot 18. As shown in Figures 1 and 2, tumbler pins 21 of varying length for coaction with the wards of the key 19, are mounted in the holes 20.

A longitudinally extending series of radially disposed holes 22 is formed in the cylinder 10, the open ends of the holes 22 communicating with the bore in the cylinder in which the key plug 12 is mounted and said holes 22 are spaced for registry with corresponding holes 20 in the key plug 12 as shown in Figure 1. Top driver pins 23 of the mushroom-type are loosely mounted in the holes 22 in the cylinder 10, the driver pins 23 being preferably of varying lengths and each in-

cluding an annularly reduced neck 24 adjacent its inner end providing a disk head 25 at the lower terminal end of the pin 23. Each hole 22 houses a coil spring for forcing the top driver pins 23 in directions toward the key plug 12.

The top surface of the key plug 12 is longitudinally cut-away or milled as at 27 in line with the surface ends of the holes 20 as clearly shown in Figures 2 and 3, the milled surface 27 extending laterally of each side of the holes 20 providing longitudinally extending grooves 28 and inwardly directed overhanging side flanges 29 at each longitudinal side of the series of holes 20.

With the key shank 19 in the key slot 18 of the key plug 12, as shown in Figure 1, the tumbler pins 21 are raised to elevate the top driver pins 23 against the tension of the springs 26 associated therewith for positioning the contacting ends of the top driver pins and the tumbler pins in the plane of the bearing surface between the key plug 12 and the bore in the cylinder 10 and at which time the key plug 12 may be rotated by the key shank 19 for the operation of the lock bolt 16. When the key shank 19 is removed from the key plug 12, the springs 26 force the top driver pins 23 and the tumbler pins 21 in a downward direction into the openings 20 in the key plug 12. If an attempt is made to pick the lock by the surreptitious operation of the tumbler pins and driver pins in the absence of the authorized key illustrated, upward movement of the tumbler pins 21 will elevate the top driver pin 23 against the tension of the spring 26 with the head 25 upon the lower end of the top driver pin moved outwardly of the hole 20 and into the plane of the milled surface 27. A partial rotation of the key plug 12 causes the head 25 of the top driver pin 23 to ride upon the milled surface 27 and be interlockingly received in a side groove 28 with the adjacent flange 29 moving into the reduced shank of the top driver pin afforded by the reduced neck 24 and into the position shown in Figure 2 whereupon it is impossible to further elevate the top driver pin 23 to place the same upon the periphery of the key plug 12. There is no position of rest upon the milled surface 27 of the key plug 12 upon which all of the top driver pins 23 could be positioned and accomplish subsequent rotation of the key plug for the release of the lock bolt 16 because any slight movement of a rotary character of the key plug 12 will positively form an interlocking connection between the top driver pins 23 and the key plug so that it is impossible to pick the mechanism of the lock.

In the form of the invention illustrated in Figure 4, the key plug has a top longitudinally milled surface 27 with holes 20 opening at the milled surface. The key plug is enclosed by a split bearing sleeve 30 extending the entire length thereof with the split ends 31 terminating at opposite longitudinal sides of the milled surface 27 substantially in line with said flanges or abutment shoulders 29.

In the form of invention illustrated in Figure 5, the key plug is enclosed by a bearing cylinder 32 that has a series of longitudinally extending spaced openings 33 therein disposed over the milled surface of the plug and of a diameter larger than the diameter of the tumbler pin receiving holes 20 and with diametrically opposite sides of the openings 33 substantially in line with said flanges or abutment shoulders 29. The split sleeve 30 shown in Figure 4 and the sleeve 32 shown in Figure 5 are secured in position on the key plug by means of a set screw 34.

From the above detailed description of the invention, it is believed that the construction and operation thereof will at once be apparent and while there are herein shown and described the preferred embodiments of the invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

I claim:

1. A lock including a cylinder, a plug rotatably mounted in said cylinder and having a key slot, the cylinder and plug having registering pin receiving holes, spring-pressed top driver mushroom-type pins mounted in the cylinder holes, tumbler pins mounted in the plug holes, and a pair of flanges extending longitudinally of the plug at the periphery thereof in the zone of the tumbler pin holes for interlocking engagement with the top driver pins said flanges being spaced laterally of the holes in the plug.

2. A lock including a cylinder, a plug rotatably mounted in said cylinder and having a key slot, the cylinder and plug having registering pin receiving holes, spring-pressed top driver mushroom-type pins mounted in the cylinder holes, tumbler pins mounted in the plug holes, the top surface of the plug having a longitudinally milled surface extending across the outer ends of the tumbler pin holes in the plug with the side edges of the milled surface disposed laterally from said holes at opposite sides thereof and providing longitudinal abutment shoulders laterally of said holes for abutting engagement with the top driver pins at points inwardly of the periphery of the plug.

3. A lock including a cylinder, a plug rotatably mounted in said cylinder and having a key slot, the cylinder and plug having registering pin receiving holes, spring pressed top driver mushroom-type pins mounted in the cylinder holes, tumbler pins mounted in the plug holes, the top surface of the plug having a longitudinally milled surface extending across the outer ends of the tumbler pin holes in the plug with the side edges of the milled surface disposed laterally from said holes at opposite sides thereof and providing longitudinally extending side grooves laterally of the milled surface and laterally of the tumbler pin holes for reception of the mushroom heads of the top driver pins to prevent rotation of the key plug to bolt releasing position.

4. A lock including a cylinder, a plug rotatably mounted in said cylinder and having a key slot, the cylinder and plug having registering pin receiving holes, spring pressed top driver mushroom-type pins mounted in the cylinder holes, tumbler pins mounted in the plug holes, the top surface of the plug having a longitudinally milled surface extending across the outer ends of the tumbler pin holes in the plug with the side edges of the milled surface disposed laterally from said holes at opposite sides thereof and an inwardly directed longitudinally extending flange at each side of the milled surface spaced outwardly of said milled surface and laterally of said holes and defining a longitudinally extending groove laterally of the tumbler pin holes for reception of the mushroom heads of the top driver pins to prevent rotation of the key plug to bolt releasing position.

5. A lock as set forth in claim 1, characterized

by a split bearing sleeve inclosing the key plug with the split ends of the sleeve respectively terminating at opposite sides of the milled surface and laterally of said holes and in line with said flanges.

6. A lock as set forth in claim 2, characterized by a split bearing sleeve inclosing the key plug with the split ends of the sleeve respectively terminating at opposite sides of the milled surface and laterally of said holes and in line with said abutment shoulders.

7. A lock as set forth in claim 1, characterized by a bearing sleeve inclosing the key plug and having a series of openings therein registering with the tumbler pin openings in the plug and of diameters larger than the diameters of the tumbler pin holes and of substantially the distance between said flanges.

8. A lock as set forth in claim 2, characterized by a bearing sleeve inclosing the key plug and having a series of openings therein registering with the tumbler pin openings in the plug and of diameters larger than the diameters of the tumbler pin holes and of substantially the distance between said abutment shoulders.

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