May 4, 1937. K. A. BRAUNING 2,079,583

LOCK

Filed Dec. 18, 1931

Fig 1

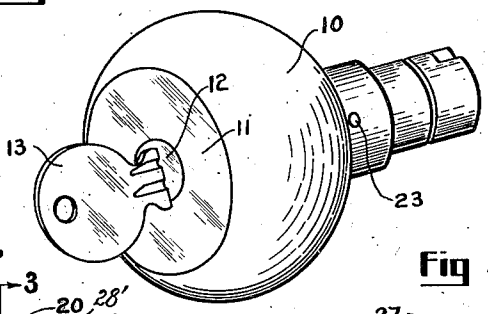


Fig 2

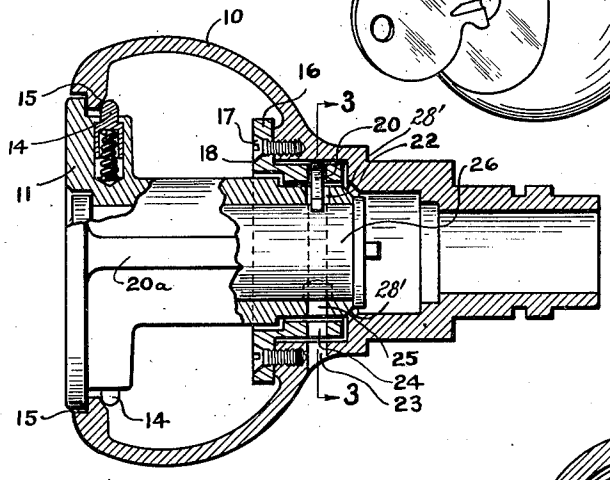


Fig 3

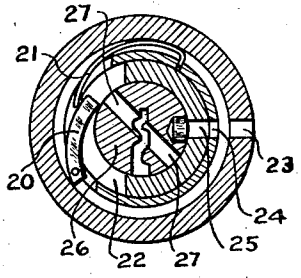


Fig 4

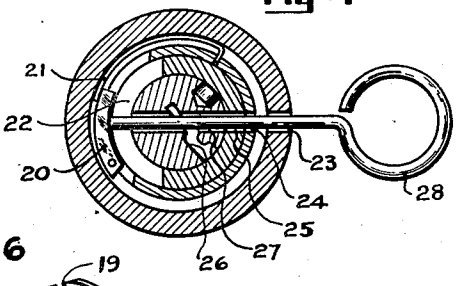


Fig 5

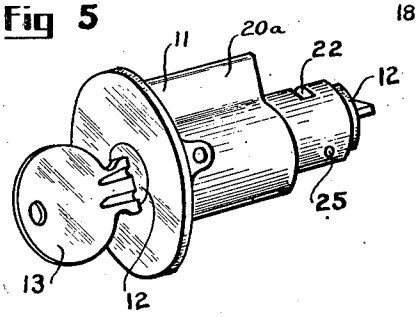
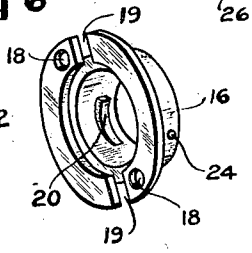


Fig 6



K. A. Brauning
INVENTOR

BY

A. H. Golden
ATTORNEY

Patented May 4, 1937 2,079,583

UNITED STATES PATENT OFFICE

2,079,583

LOCK

Karl A. Brauning, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, Stamford, Conn.

Application December 18, 1931, Serial No. 581,896

11 Claims. (Cl. 70—224)

This invention relates to locks, and more especially to cylinder locks adapted to be easily inserted into a lock housing, and to be easily removed therefrom.

It is the object of my invention to provide a cylinder lock having a key operated plug and retained in a housing by means operating between the cylinder and the housing for normally securing the cylinder against removal. It is a further object of the invention to so arrange the retaining means that they can only be operated to allow removal of the cylinder from the housing when the plug has been key operated to a definite position in a definite manner.

It is a still further object of my invention to design a cylinder operable in a knob or other handle device, there being a retainer cooperating with the cylinder and the knob or handle, whereby the cylinder is normally retained in the knob or handle, an opening being provided whereby the cylinder retainer may be operated, the key plug of said cylinder having means for obstructing the operation of the retainer through said opening until said plug has been key operated to a definite position.

For a description of my invention, I shall hereinafter refer to the drawing, wherein Fig. 1 is a perspective view of a knob in which is mounted a cylinder comprising a specific modification of my invention. Fig. 2 is a section through the knob of Fig. 1 illustrating the cylinder and the retaining means for maintaining the same in the knob. Figs. 3 and 4 are sections taken along the line 3—3 of Fig. 2 illustrating the retainer and the means for operating the same. Figs. 5 and 6 are perspective views of the cylinder plug and key, and a sleeve cooperating with the same.

Referring now more particularly to the drawing, reference numeral 10 indicates a knob of the type well known in the locking art. This knob has mounted therein a cylinder 11 having a key plug 12 operable by a key 13. In Fig. 2, it will be seen that the knob 10 is hollow and that the cylinder 11 has a pair of spring plungers 14 which fit behind shoulders 15 of the knob for retaining the front end of the cylinder releasably in the knob. The retaining plungers 14 are so shaped that mere outward pressure on the cylinder will act to release the same relatively to the knob 10, since the main function of the plungers is to maintain the cylinder against vibration.

The inner end of the knob 15 has a sleeve 16 secured thereto by a pair of screws 17 operating in the screw-holes 18, and threaded into the body of the knob 10. The sleeve 16 is equipped with slots 19 one of which is adapted to fit over the driver carrying portion 20a of the cylinder, shown more particularly in Fig. 5, to maintain the cylinder against rotation in the knob. The sleeve 16 carries therein a spring pressed retainer 20 adapted to be pressed by a spring 21 in a direction wherein it will ride in a groove 22 on an extension of the cylinder 11, as will be readily understood from Figs. 2, 3, and 5. From the description given so far, it is apparent that the knob 10 has secured thereto a sleeve 16 carrying a spring pressed retainer 20 which operates in a groove 22 of the cylinder to retain the cylinder against endwise movement. It is apparent also that the cutaway portion 19 of sleeve 16 cooperates with the driver containing portion 20a to prevent rotary movement of the cylinder relatively to the knob, and that the plungers 14 operate at the front of the cylinder to maintain the front end in firm position against the shoulders 15 of the knob.

It is desirable in locks of the type under discussion that the cylinders be removable easily so that new cylinders may be replaced when it is desired to change the key combination. For this purpose, my knob 10 has an opening therein designated by numeral 23. This opening 23 aligns with a further opening 24 in the sleeve 16, which is further aligned with an opening 25 in the cylinder. These three openings are so located that they are on the side of the knob diametrically opposite the spring retainer 20, so that operation of the retainer by a tool inserted through the aligned openings will be impossible due to the obstruction to the path of the tool by the solid body 26 of the plug 12 of the cylinder.

The relation of the elements is clearly illustrated in Fig. 3 wherein the plug body is shown in a position to prevent the insertion of a tool as will be readily understood. However, when it becomes desirable to operate the retainer to remove the cylinder, it is possible to rotate the plug 26 by action of the key 13 until a bore 27 in the plug comes into alignment with the openings 23, 24 and 25, so that a tool 28 may then be inserted in the manner clearly illustrated in Fig. 4. Operation of this tool will obviously retract the retainer 20 against the action of the spring 21 and withdraw that retainer from groove 22 in the cylinder, so that the cylinder will be readily removable and a different cylinder insertible in its stead. In order to permit easy insertion of the cylinder 11, its end surface 28' is beveled to cam retainer 20 out of its path.

When the slot 22 of this cylinder is opposite retainer 20, the retainer snaps into said slot and the cylinder is thereafter held against removal, as will be quite clear.

My invention should be broadly construed to cover the combination of a lock housing having a cylinder therein, and a retainer cooperable with the cylinder and housing for normally retaining the cylinder within the housing, the operation of the retainer by a tool or other means being controlled by the key operation of the plug of the cylinder, and while I have shown a particular modification of my invention, it should be understood that variations of the same within the scope of the appended claims will readily occur to those skilled in the art.

I claim:

1. In a lock, a cylinder, a key plug in said cylinder adapted for key operation, a retainer for maintaining the cylinder in the lock, said retainer being normally maintained inaccessible for operation, said key plug having an opening in addition to the keyway positionable by operation of the plug to render said retainer accessible, whereby said retainer may be operated to release the cylinder from said lock.

2. In a lock, a cylinder, a key plug in said cylinder adapted for key operation, a retainer for maintaining the cylinder in the lock, said retainer being mounted in the lock and having means securing the cylinder to the lock, said lock having an opening whereby said retainer may be reached to release the cylinder, and means controlled by operation of the key plug to obstruct operation of the retainer through said opening.

3. In a lock, a cylinder, a key plug in said cylinder adapted for key operation, a retainer for maintaining the cylinder in the lock, said lock having an opening whereby said retainer may be reached for operation whereby to release the cylinder, and means controlled by the movement of the key plug to obstruct operation of the retainer through said opening.

4. In a lock, a cylinder, a key plug in said cylinder adapted for key operation, a retainer for maintaining the cylinder in the lock, said retainer being mounted on the lock and having means securing the cylinder to the lock, said lock having an opening whereby said retainer may be reached to release the cylinder, said key plug being normally positioned to obstruct operation of the retainer, said plug having an opening adapted to be aligned with said lock opening when said plug is key rotated to a designated position, whereby said retainer may be operated to release the plug and cylinder for removal.

5. In a knob, a cylinder having a key plug, said cylinder and plug being insertible into said knob through an opening in the front of the knob, a spring pressed retainer operable between said cylinder and knob to retain the cylinder in the knob, said knob having an opening whereby said retainer may be reached to release the cylinder, said key plug being normally positioned to obstruct operation of the retainer, said plug having an opening adapted to be aligned with said knob opening when said plug is key rotated to a designated position whereby said retainer may be operated to release the plug and cylinder for removal.

6. In a lock, a cylinder, a key plug in said cylinder, a retainer for maintaining said cylinder in the lock, said lock having an opening through which the retainer may be operated for permitting removal of the cylinder from the lock, and means controlled by key actuated movement of the plug for permitting or preventing effective operation of the retainer through said lock opening.

7. In a lock, a cylinder, a key plug in said cylinder, a retainer for maintaining said cylinder in the lock, said lock having an opening through which the retainer may be operated for permitting removal of the cylinder from the lock, and means controlled by key actuated movement of the plug for preventing or permitting access to said retainer through said lock opening.

8. Lock structure, comprising a plug, a cylinder adapted to receive the plug, lock tumblers cooperating with the plug and cylinder, a casing into which the cylinder and plug are adapted to be inserted, and means accessible in a direction transversely of the axis of the lock structure, when the structure is assembled, and only when the plug is in unlocked position, for maintaining the cylinder in place in the casing.

9. In a knob, a cylinder having a key plug, said cylinder and plug being insertible into said knob through an opening in the front of the knob, a spring pressed retainer operable between said cylinder and knob to retain the cylinder in the knob, said knob having an opening whereby said retainer may be reached to release the cylinder, and means controlled by the rotation of the key plug for normally obstructing the operation of said retainer through said knob opening.

10. In a knob, a cylinder having a key plug, said cylinder and plug being insertible into said knob through an opening in the front of the knob, a spring pressed retainer operable between said cylinder and knob to retain said cylinder against outward movement from the knob, means cooperable between said cylinder and knob for preventing rotation of said cylinder relatively to said knob, said knob having an opening whereby said spring pressed retainer may be operated to release the cylinder for outward movement, and means controlled by the rotation of the key plug for normally obstructing the operation of said retainer through said knob opening.

11. In a knob, a cylinder having a key plug and a driver containing chamber, said knob having an opening extending from its front face to its interior, said cylinder being insertible into said knob opening, a slotted surface in said knob interior cooperable with said driver chamber to prevent rotation of said cylinder relatively to said knob when said cylinder is properly inserted into said knob opening, a spring pressed retainer operable between said cylinder and knob to retain the cylinder in the knob, said knob having an opening whereby said retainer may be reached to release the cylinder, and means controlled by the rotation of the key plug for normally obstructing the operation of said retainer through said knob opening.

KARL A. BRAUNING.