Aug. 19, 1947. L. L. KELL 2,426,141

LOCK CYLINDER

Filed March 13, 1944

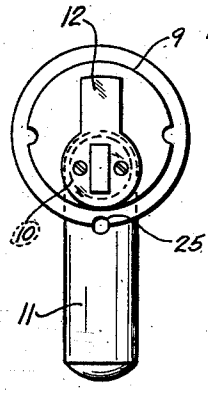


FIG. 1.

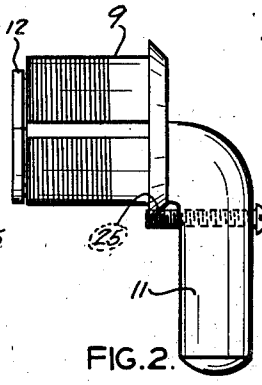


FIG. 2.

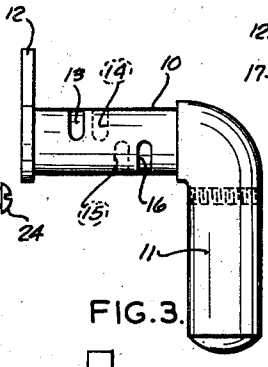


FIG. 3.

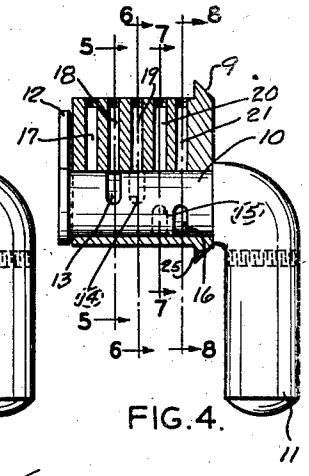


FIG. 4.

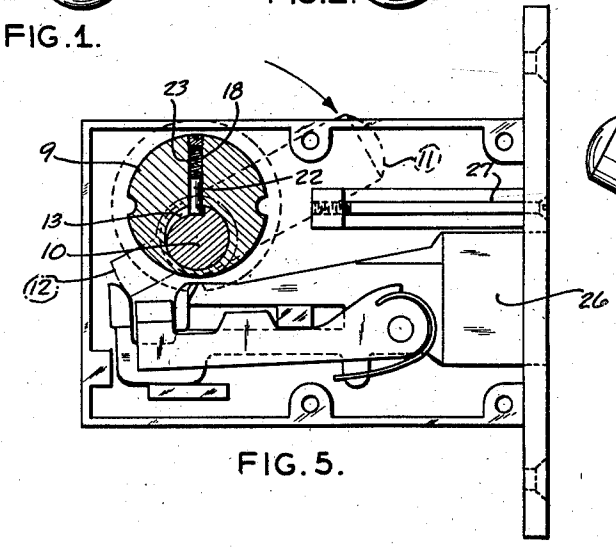


FIG. 5.

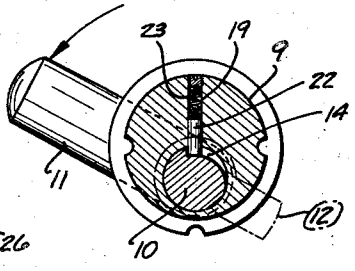


FIG. 6.

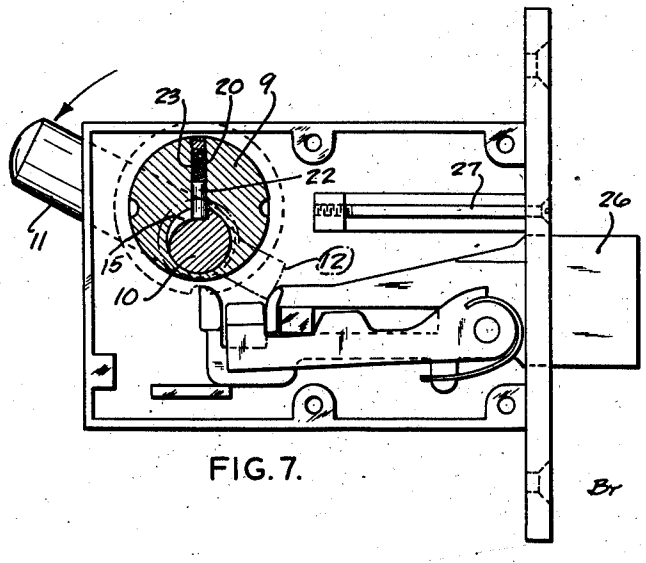


FIG. 7.

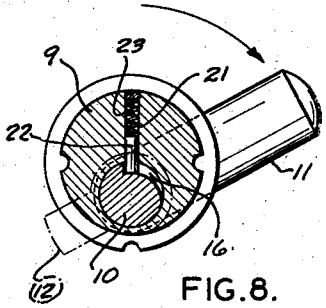


FIG. 8.

INVENTOR
LESTER L. KELL
BY J. H. G. Cook
ATTORNEY

Patented Aug. 19, 1947

2,426,141

UNITED STATES PATENT OFFICE

2,426,141

LOCK CYLINDER

Lester L. Kell, St. Louis, Mo.

Application March 13, 1944, Serial No. 526,185

3 Claims. (Cl. 292—140)

1

My invention relates to the improvements in lock cylinders, the object of which is to provide a cylinder having a spindle with a handle attached, which can easily be installed in any (cylinder type) standard make of mortise dead lock, on the inside of a room door, thereby providing a means for operating the bolt of the lock from the inside of the room by simply turning the handle.

My improvements also provide means for the adjustments by which the cylinder can be made to function in different ways.

First, the cylinder can be adjusted and installed in a lock and used to lock and unlock a door from the inside of a room, by operating the handle.

It can be substituted for a regular lock cylinder requiring a key, or for certain devices equipped with thumb turns and used for the same purposes.

Second, the cylinder can be adjusted so that a door can be unlocked from the inside of a room, but not locked from the inside of a room.

This adjustment makes the cylinder suitable for use in class rooms of school buildings and other places where it is desired to provide a reliable and convenient means for unlocking the room doors from the inside for exit purposes when necessary and to prevent students or other people from locking themselves in the rooms so equipped.

With either of the above adjustments made on the inside cylinder, the door can still be locked and unlocked from the outside by using the proper key in the regular cylinder on the outside of the door.

Third, the cylinder can be adjusted so that a door on which it is installed can not be unlocked from the outside with a key while the handle of the inside cylinder is turned in the locked position, but when the handle is turned back in the unlocked position the door can readily be locked or unlocked from the outside by using the proper key in the regular outside cylinder.

With this adjustment my improved cylinder is made suitable for use on the inside of lavatory room doors, or on the doors of other rooms where privacy is desired, as its use prevents any one from unlocking the door from the outside with a key, while the person on the inside of the room has the cylinder handle turned in the locked position.

For these purposes my invention consists in certain novel details of the construction and arrangement of the parts which will be hereinafter explained and illustrated by the accompanying drawings, in which

2

Figure 1 is an elevation of a lock cylinder embodying my invention.

Fig. 2 is a view similar to Fig. 1 taken from a different view.

Fig. 3 is an elevation of the spindle and handle with the cam attached, removed from the body of the cylinder.

Fig. 4 is a view similar to Fig. 2 but shows a cross section of the cylinder body.

Fig. 5 is an enlarged cross-sectional view taken on line 5—5, Fig. 4.

Fig. 6 is an enlarged cross-sectional view taken on line 6—6, Fig. 4.

Fig. 7 is an enlarged cross-sectional view taken on line 7—7, Fig. 4.

Fig. 8 is an enlarged cross-sectional view taken on line 8—8, Fig. 4.

Referring by numerals to the accompanying drawings, 9 designates the cylinder body which may be of the same design, size and type of construction as in other standard makes of lock cylinders, and with the exception of a semicircular notch 25 in the lower part of the rim, in its specific construction forms no part of my invention except in combination with the spindle and the handle which is of a special design and construction.

10 designates the spindle, 11 the handle, and 12 the cam which is shown attached to the end of the spindle, opposite the handle with two small screws.

The spindle and handle is preferably made of metal, in one solid piece.

13, 14, 15, and 16 designate gradually deepened arched angular grooves, all of which begin and end at different places on the spindle body. As shown in Fig. 4 they are respectively in line with the small vertical bores 18, 19, 20 and 21, in the upper part of the cylinder body. They are shown separately in Figs. 5, 6, 7, and 8.

A cylinder pin 22, and a spring 23, which compresses the pin slightly, are placed in one of the small vertical bores in the upper part of the cylinder body. The bore selected depends on the adjustment desired.

If the second adjustment previously referred to is desired, the cylinder pin 22 and the spring 23 are placed in the bore 18 which is in line with the groove 13.

By reference to Fig. 5 of the drawing and assuming that my improved lock cylinder 9 has been screwed into its proper position in the lock and made secure with the set screw 27, also assuming that a regular lock cylinder (not shown in the drawing) which operates with a key, is

screwed and fastened into the opposite side of the lock, the dead bolt 26 can be projected or retracted by inserting and turning the proper key in the regular outside cylinder.

With the dead bolt 26 projected and in a locked position, it is to be observed that when the cylinder handle 11 is turned in the direction indicated by the arrow, the cam 12 attached to the end of the spindle 10 contacts and throws the dead bolt in the unlocked position as is shown.

At this point the cylinder pin 22 which has been in constant contact with the curved surface of the spindle, drops into the deepened end of the groove 13 as shown and prevents the spindle and the handle from being turned back in the opposite direction beyond the point where the deepened end of the groove contacts the cylinder pin, thereby preventing the lock from being locked from the inside of the room with the handle.

The cylinder handle 11 which is the lever style and is weighted, when released, comes to rest in a downward position, holding the small end of the cam in an upward position and away from the part of the bolt it contacts when it is thrown. In this position the cam can not interfere with the locking or unlocking from the opposite side when the key is used in the regular outside cylinder, as sometimes occurs when certain devices equipped with thumb turns are used.

If my improved cylinder is to be used in the opposite (cover plate) side of the lock and the second adjustment is desired, it will be necessary to remove the cylinder pin and the spring from the bore 18 and place them in the bore 19 which is in line with the groove 14.

As shown in Fig. 6 it is to be observed that the arched groove 14 (when compared with 13) begins on the opposite side of the spindle body and is gradually deepened in a reverse direction, but when the cylinder is turned end for end and screwed into its proper position in the cover plate side of the lock, the contour of the groove 14 will be in line and coincide with the contour of the groove 13 as shown in Fig. 5 when the spindle handle and the cam are turned to their respective positions as shown in Fig. 5.

The cylinder with the pin and the spring in the bore 19 when it is installed in the cover plate side of the lock, operates the bolt of the lock in the same manner as when it is used in the opposite side of the lock with the pin and the spring in the bore 18.

If the third adjustment previously referred to is desired, the cylinder pin 22 and the spring 23 are placed in the bore 20 which is in line with the groove 15.

By reference to Fig. 7 of the drawing and assuming that the lock cylinder 9 has been screwed into its proper position in the lock and made secure with the set screw 27, it is to be observed that when the dead bolt 26 of the lock is in the unlocked position, the weighted lever handle 11 will hang downward holding the cam 12 upward and away from the dead bolt of the lock, but when the handle is rotated in the direction indicated by the arrow, the cam 12 attached to the end of the spindle 10 contacts and throws the dead bolt into a locked position as shown. At this point the cylinder pin 22 which has entered the groove 15 at its shallow end, contacts the deepened end of the groove and stops the handle, the spindle and the cam from being rotated (in the direction indicated by the arrow) beyond the position shown in Fig. 7.

The cam 12 while being held in its position as shown, with its small end against the dead bolt (by the weighted handle and the cylinder pin) prevents the dead bolt from being unlocked from the outside of the room by means of the regular cylinder and key, but when it is unlocked from the inside by turning the handle back in the opposite direction, the weighted handle, when released, stops in a downward position, holding the cam upward and away from the bolt of the lock which can then be readily operated (locked and unlocked) from the outside by using the proper key in the regular outside cylinder.

If the improved cylinder is to be used in the opposite (cover plate) side of the lock and the third adjustment is desired, it will be necessary to remove the cylinder pin and the spring from the bore 20 and place them in the bore 21 which is in line with the groove 16.

As shown in Fig. 8 it is to be observed that the arched groove 16 (when compared with 15) begins on the opposite of the spindle body and is gradually deepened in a reverse direction, but when the cylinder is turned end for end and screwed into its proper position in the cover plate side of the lock, the contour of the groove 16 will be in line and coincide with the contour of the groove 15 as shown in Fig. 7 when the spindle handle and the cam are turned to their respective positions as shown in Fig. 7.

The cylinder with the pin and the spring in the bore 21 when it is installed in the cover plate side of the lock, operates the bolt of the lock in the same manner as when it is used in the opposite side of the lock with the pin and the spring in the bore 20.

For the first adjustment, no cylinder pin and spring is necessary, but they may be kept if the second or third adjustment is later contemplated, by placing them in the bore 17, opposite to which there is no groove in the spindle body.

With the cylinder pin and the spring placed in the bore 17, or removed entirely from the upper part of the cylinder body, the cylinder may be installed in either side of a lock and used to lock and unlock a door from the inside of a room by simply turning the weighted handle.

When the handle and the spindle are rotated, the cam attached to the opposite end of the spindle, contacts and throws the dead bolt of the lock in or out, depending on the direction in which the handle, the spindle, and the cam are rotated.

The weighted handle when it is released, comes to rest in a downward position, holding the cam which is attached to the opposite end of the spindle, upward and away from the bolt of the lock, where it will not interfere with locking or unlocking the door from the outside with the proper key in the regular outside cylinder.

In Fig. 2 of the drawing it will be observed that a set screw 24, extends through a tapped bore in the cylinder handle, and interlocks with a semicircular notch 25 in the rim of the cylinder body. Its only purpose is to prevent the handle, the spindle, and the cam, from turning in the cylinder body while the cylinder is being screwed into or out of the lock. This set screw while not absolutely essential, facilitates the installation and the removal of the cylinder. It should be removed from the handle after the cylinder has been installed in the lock.

The different grooves in the spindle do not need to be arranged in the order I have placed them. The spindle body may be designed and constructed

so that any groove previously referred to, may be in line with any of the bores selected.

Having described my invention, what I claim as new therein and desire to secure by Letters Patent of the United States therefor is:

1. The combination of a lock cylinder body having a horizontal bore extending through its entire length and a vertical bore intersecting said horizontal bore, a recessed cylindrical body sized to fit said horizontal bore and extending through and revolving freely therein, a movable element seated in said horizontal bore and adapted to engage the recessed portion of said cylindrical body, a lever handle at one end of said cylindrical body, and a cam attached to the end of said cylindrical body opposite said handle.

2. The combination of a lock cylinder body having a horizontal bore extending through its entire length and smaller vertical bores intersecting said horizontal bore, a cylindrical body sized to fit said horizontal bore and extending through and revolving freely therein, a weighted lever handle at one end of said cylindrical body and a cam attached to the end of said cylindrical body opposite said handle, a spring-pressed element, said cylindrical body having gradually deepened grooves extending part of the way around and into said cylindrical body and each groove terminating in an angular shoulder, any one of which may be selected and arranged when assembled to contact said spring-pressed element and stop said cylindrical body with its cam and weighted handle from being turned in a predetermined direction beyond the point where the angular shoulder contacts said spring-pressed element within the lock cylinder body.

3. The combination of a detachable lock cylinder body having an off-center circular opening extending through its entire length, with a cylindrical body sized to fit extending through and revolving freely within the off center circular opening of the detachable lock cylinder body, and having an over balanced weighted handle on one end of the cylindrical body and a lever attached to its opposite end, said lever being sized to contact, project, and retract the dead bolt of a lock into which it may be installed, and having the contact end of the lever directionally opposite to the over balanced weighted portion of the handle.

LESTER L. KELL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,089,324	Chesley	Mar. 3, 1914
510,397	Beardsley	Dec. 12, 1893
1,124,983	Whitaker	Jan. 12, 1915
1,955,439	Robinson	Apr. 17, 1934
2,178,666	Larson	Nov. 7, 1939
2,303,790	Chesler	Dec. 1, 1942
323,603	Staib	Aug. 4, 1885
968,334	Ellsworth	Aug. 23, 1910