Aug. 13, 1946. G. E. SWANSON 2,405,911

CYLINDER LOCK

Filed May 25, 1945

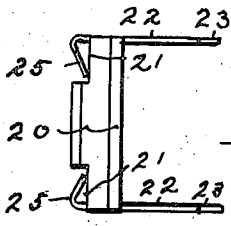


Fig. 3

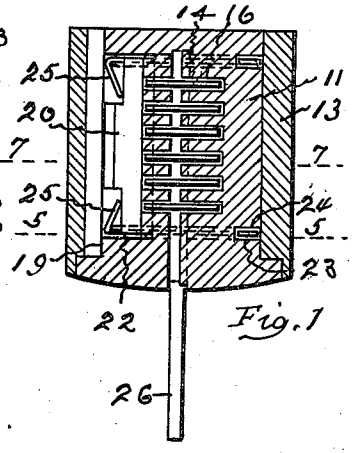


Fig. 1

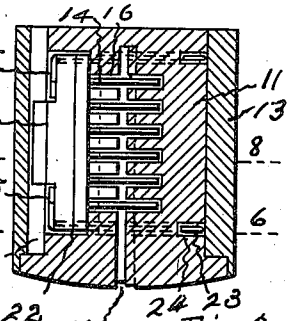


Fig. 2

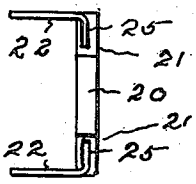


Fig. 4

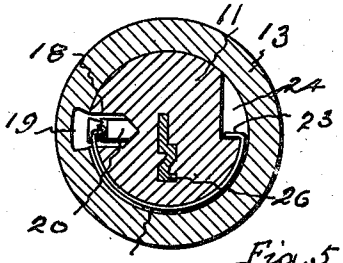


Fig. 5

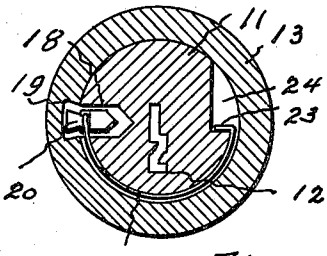


Fig. 6

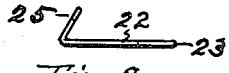


Fig. 9

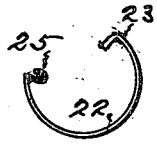


Fig. 10

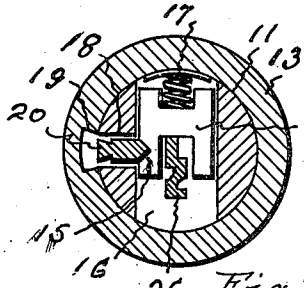


Fig. 7

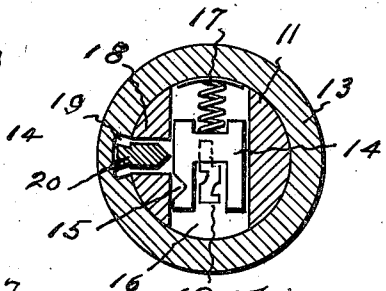


Fig. 8

INVENTOR.

Gunnar E. Swanson

BY Harry R. Williams

Atty.

Patented Aug. 13, 1946

2,405,911

UNITED STATES PATENT OFFICE

2,405,911

CYLINDER LOCK

Gunnar E. Swanson, New Britain, Conn.

Application May 25, 1945, Serial No. 595,805

4 Claims. (Cl. 70—364)

1

This invention relates to cylinder locks of the type in which the cylinder carries a locking bar that extends outward from the cylinder into a slot in the barrel to prevent the cylinder from being turned unless a properly bitted key is inserted into the cylinder and the tumblers so positioned that the locking bar can move completely out of the barrel slot and into the cylinder.

The object of the improvement is the provision of simple, durable, and easily applied means for retaining the cylinder and locking bar together and the latter in operative relation to the tumblers, which is especially adaptable to locks of small size.

This object is attained by the provision of springs of such shape that they can be snapped on cylinders of small diameter and will bear upon the locking bars with a torsional or twisting force, in such manner that deep grooves or cutting away of essential parts of the cylinder and locking bar for receiving and allowing free action of the springs, is avoided.

In the accompanying drawing

Fig. 1 shows a longitudinal section of the improved lock with the locking bar withdrawn from the barrel slot so that the cylinder can be turned.

Figure 2 is a similar view with the locking bar extending into the barrel slot and preventing the cylinder from turning.

Figure 3 is a detail view of the locking bar and the bar retaining springs.

Figure 4 is a view of the parts shown in Fig. 3 turned 90 degrees.

Figure 5 shows a transverse section on the dotted line 5—5 of Fig. 1.

Figure 6 shows a transverse section on the dotted line 6—6 of Fig. 2.

Figure 7 is a section on the dotted line 7—7 of Fig. 1.

Figure 8 is a section on the dotted line 8—8 of Fig. 2.

Figure 9 is an edge view of one of the locking bar retaining springs.

Figure 10 is a side view of the locking bar retaining springs.

In the lock illustrated the cylinder 11, having the customary key slot 12, is fitted to turn in the barrel 13. The tumblers, which may be of any desired type and number are illustrated as H-shaped plates 14 with notches 15 in their edges, fitted in grooves 16 so as to be movable transversely of the cylinder across the key slot. Springs 17 are arranged to normally press the tumblers toward any key that is inserted into the key slot.

2

In one side of the cylinder is a slot 18 and normally opposite this slot is a complementary slot 19 in the barrel. Movably fitted in these slots is the locking bar 20 that has notched ends 21.

The locking bar is retained in place and is pressed inward toward the tumblers by bow springs 22. The ends 23 of these springs are bent inward and hooked into slots 24 in the cylinder. The other ends of these springs are bent inward at approximately right angles to the planes of the bows to form fingers 25 that will extend over and bear on the notched ends of the locking bar so as to press the bar toward the tumblers.

With no key in the cylinder the springs 17 press the tumblers 14 down across the key slot and the springs 22 press the bar into engagement with the tumblers above the tumbler notches 15. Under this condition the bar is partly in the barrel and partly in the cylinder and the latter held from turning.

With the correct key 26 thrust into the key slot the tumblers are lifted so that the notches 15 are aligned and the bar pressed by the springs 22 out of the barrel slot and into the tumbler notches leaving the cylinder free to be turned. When the key is withdrawn the springs 17, being stronger than the springs 22, press the tumblers down and cause them to push the bar outward into the barrel.

In the form herein described as the fingers 25 at the ends of the bow springs project angularly from the planes of the bows the effective co-action of the tumblers and the fingers is to twist or put the bow springs under torsional strain. In the prior constructions the springs merely open and close or expand and contract according to the movements of the tumblers. As the result of utilizing torsional strain the bow springs do not require the cutting of deep grooves in the cylinder and locking bar to retain them in place and afford them free action. This allows duplicate springs or even a single spring, to be located at any suitable point longitudinally of the cylinder and bar in locks of small size.

The invention claimed is:

1. A lock having a barrel with a locking bar slot, a cylinder with a locking bar slot rotatable in the barrel, tumblers carried by the cylinder, and a locking bar yieldingly retained in the cylinder slot and adapted to be moved into the barrel slot, said locking bar retaining means being comprised of bow springs that embrace the cylinder with their ends shaped to so bear on the locking bar that when the locking bar is pressed outward into the barrel slot the springs will be

torsionally twisted and when the locking bar is relieved of outward pressure the torsional force of the spring will move the locking bar out of the barrel slot.

2. A lock having a barrel with a locking bar slot, a cylinder with a locking bar slot rotatable in the barrel, tumblers carried by the cylinder, a locking bar yieldingly retained in the cylinder slot and adapted to be moved into the barrel slot, and locking bar retaining means comprised of bow springs that removably embrace the cylinder and the locking bar with ends that extend into slots in the cylinder and ends that extend, at right angles to the planes of the bows into engagement with the locking bar in such manner that torsional twist is imparted to the springs when the locking bar is moved into the barrel slot.

3. A lock having a barrel with a locking bar slot, a cylinder with a locking bar slot rotatable in the barrel, tumblers carried by the cylinder, a locking bar yieldingly retained in the cylinder

slot and movable into the barrel slot, and bow springs with ends extending into slots in the cylinder and ends extending at right angles to the planes of the bows and bearing on the locking bar in such manner as to exert torsional twisting force in the springs when the locking bar is moved into the barrel slot.

4. A lock having a barrel with a locking bar slot, a cylinder with a locking bar slot and shallow peripheral grooves rotatable in the barrel, tumblers carried by the cylinder, a locking bar yieldingly retained in the cylinder slot and movable into the barrel slot, and locking bar retaining means comprised of bow springs located in said shallow grooves, that embrace the cylinder and the locking bar with ends engaged with the cylinder and ends extending at angles from the planes of the bows into engagement with the locking bar in such manner as to exert torsional resisting force in the springs when the locking bar is moved into the barrel slot.

GUNNAR E. SWANSON.