Feb. 21, 1967 T. H. JOHNSTONE 3,304,755

CYLINDER LOCK ACTUATOR

Filed Oct. 28, 1964

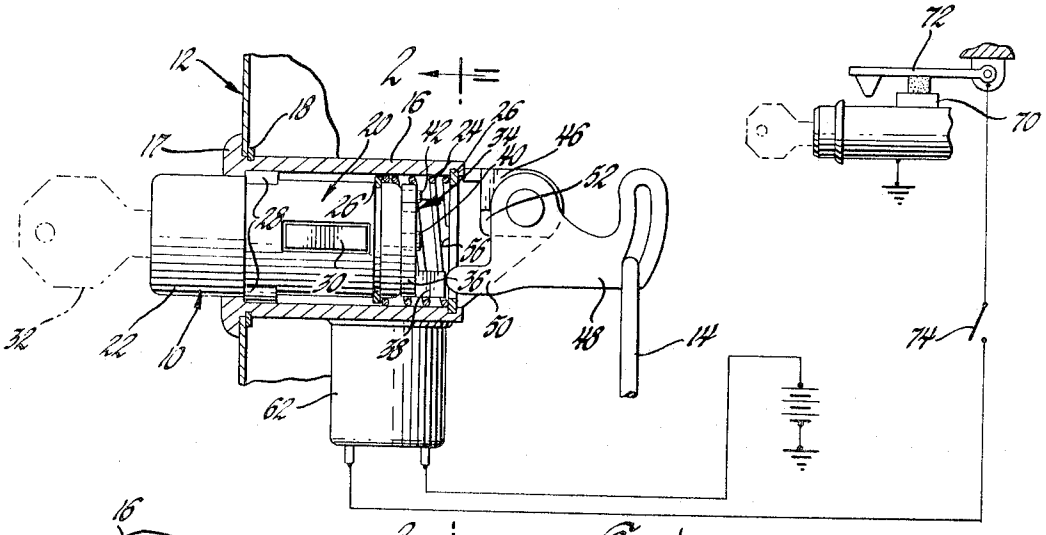


Fig. 1

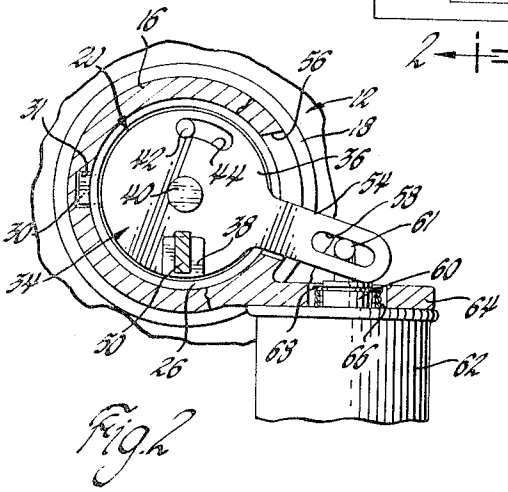


Fig. 2

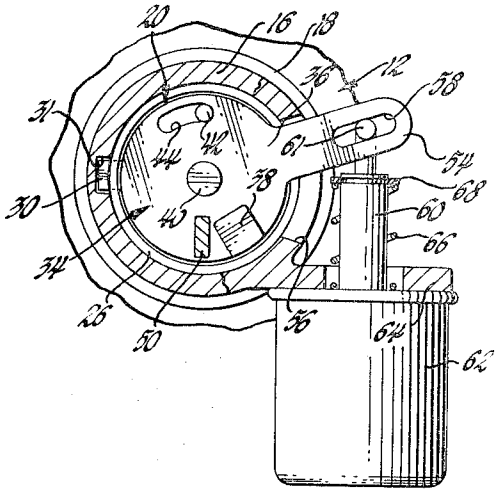


Fig. 3

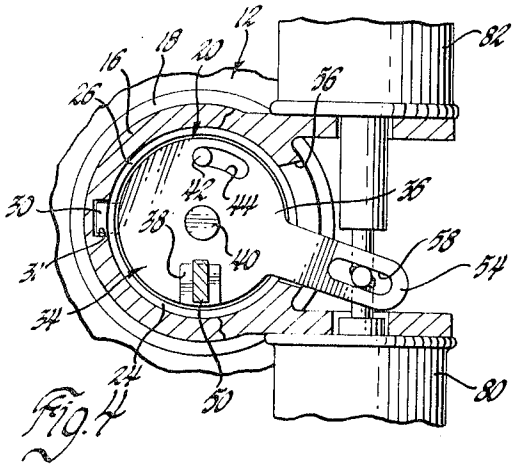


Fig. 4

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CYLINDER LOCK ACTUATOR

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1 Claim. (Cl. 70—279)

This invention relates generally to actuators and more particularly to a new and improved combined push button and cylinder lock actuator.

This invention provides an improvement in the type of combined push button and cylinder lock actuator wherein a key or other locking means conditions the actuator for operation, the improvement particularly residing in the provision of some auxiliary means for conditioning the actuator for operation independently of use of the key. This is especially advantageous, for example, in a vehicle body deck lid installation wherein some authorized auxiliary control obviates the necessity for constant use of the key to gain repeated access to the vehicle compartment. In a preferred embodiment, the actuator of this invention generally includes a combined push button and key lock cylinder member rotatably and axially slidably mounted in a surrounding casing, and an actuating member adapted to be moved between an operative position wherein it is responsive to actuating movement of the cylinder member to operate some associated mechanism, for example a deck lid latch, and an inoperative position wherein the actuating member is nonresponsive to such actuating movement. The actuating member may be located in its operative position either by using the proper key or by auxiliary means which are operable independently of use of the key.

The primary object of this invention is to provide a new and improved combined push button and cylinder lock actuator which may be conditioned for operation either through use of a proper locking agency or by auxiliary means operable independently of such agency.

This and other objects and features of the invention will be readily apparent from the following specification and drawings wherein:

FIGURE 1 is a diagrammatic view, partially in section, of an actuator according to this invention;

FIGURE 2 is an enlarged sectional view of a portion of FIGURE 1 taken generally along the plane indicated by the lines 2—2 thereof and showing the actuator in actuating condition;

FIGURE 3 is a view similar to FIGURE 2 showing the actuator in nonactuating condition; and

FIGURE 4 is a view similar to FIGURE 2 of another embodiment of an actuator according to this invention.

Referring now particularly to FIGURE 1 of the drawings, the actuator, designated generally as **10**, is shown mounted on a supporting body **12**. For purposes of illustration, the actuator may be considered as being applied in a vehicle body deck lid installation, body **12** representing the outer panel of the deck lid. The actuator may be further considered as being employed to actuate a deck lid latch, an operating member of which is indicated at **14**. A suitable form of deck lid latch usable with the actuator of this invention is disclosed in Fox et al. 2,886,365, issued May 12, 1959. In such case, member **14** represents suitable linkage connecting the present actuator to the roll-back or detent release member of the Fox et al. latch.

Actuator **10** is generally of the combined push button and cylinder lock type and includes a casing **16** extending through an opening in outer panel **12** and being held thereon by the engagement therewith of a decorative casing end portion **17** and a snap ring **18**. A lock cylinder **20** is rotatably and slidably received within the casing and includes an integral push button portion **22** adapted to extend exteriorly of the casing end portion under the action of a coil compression spring **24** seating between a pair of snap rings **26** on the cylinder and on an interior end portion of the casing. Circumferentially spaced embossments **28** on the cylinder are engageable with the casing end portion **17** to locate the cylinder in the extended position shown against the action of spring **24**.

Cylinder **20** is functionally of the retractable side bar type, the side bar **30** being received in the extended position thereof within a locking groove **31** on the interior of casing **16** and extending substantially throughout the length thereof, FIGURE 2. The structural and functional details of a suitable mechanism providing the locking function of cylinder **20** may be had upon reference to U.S. Patent 2,949,762, issued August 23, 1960, but suffice it to say here that cylinder **20** is locked against movement within casing **16** by the projection of side bar **30** into the locking groove **31**, and suitable tumbler means are provided to withdraw the side bar from the groove upon the insertion of a properly coded key indicated at **32**. In the actuator illustrated in FIGURES 1 through 4, the side bar **30** when extended is operative to prevent rotation of cylinder **20**, the cylinder being freely slidable within the casing at all times.

Referring now to FIGURES 1 through 3, an actuating member **34** includes a generally disc-shaped portion **36** lying adjacent the interior end of cylinder **20** and rotatably mounted thereto by a pin **40**, and an actuating lug **38** extending from the portion **36**. A second pin **42** on the cylinder end is received within an arcuate lost motion slot **44** in portion **36** to provide operative connection for transmitting rotation of the cylinder to the actuating member. Mounted on an ear **46** of casing **16** is an operating member **48** which carries in a slot thereof one end of the member **14**. A nose **50** of member **48** extends toward the cylinder for engagement with lug **38**, and an embossment **52** on ear **46** locates member **48** in nonactuated position as shown.

The actuating member **34** is rotatable either in response to rotation of cylinder **20** or independently thereof between an operative position as shown in FIGURE 2 and an inoperative position, FIGURE 3. In its operative position, member **34** is located to have lug **38** thereof juxtaposed to nose **50**, whereby upon inward sliding movement of cylinder **20**, member **48** will be rotated for actuation of the deck lid latch through member **14**. In its inoperative position, the actuating member is located to have lug **38** rotatively displaced from nose **50** whereby inward sliding movement of cylinder **20** is ineffective to cause rotation of member **48** to actuate the latch. It will be understood that member **34** may be moved between these positions by inserting key **32** in cylinder **20** to withdraw side bar **30**, and subsequently rotating the cylinder. Suitable spring return means may be provided to normally locate cylinder **20** in the neutral position shown, or alternatively and preferably, provision may be made to prevent key withdrawal in other than the neutral position.

Referring to FIGURE 2, actuating member **34** further includes an elongated ear **54** of portion **36** extending radially of casing **16** and through an opening **56** thereof. An elongated lost motion slot **58** is provided in ear **54** through which is received one leg **61** of a generally L-shaped armature **60** of a miniature solenoid **62**. The solenoid is mounted on a laterally extending mounting portion **64** of the casing, and armature **60** is biased to an extended position by a coil compression spring **66** seating between the solenoid housing and a collar **68** on the armature. It will be readily apparent that upon en-

ergization of solenoid **62**, the actuating member **34** may be rotated from inoperative to operative positions independently of use of key **32** to unlock cylinder **20**. The cylinder may then be pushed inwardly to rotate the operating member **48** and actuate the latch. Leg **61** of armature **60** is of sufficient length to remain with ear **54** during this inward movement. When the solenoid is deenergized, spring **66** returns actuating member **34** to inoperative position. It will further be noted that the spring performs the same function when key **32** is used rather than the solenoid.

Many suitable circuit means for energizing the actuator solenoid **62** may be provided, but to ensure only deliberate authorized operation thereof when used in a vehicle, the solenoid is preferably wired in series with the grounded ignition cylinder lock for the vehicle, the retractable side bar **70** of which provides actuation for a contact of first switch **72**, a second switch **74** being provided so as to require conscious deliberate conditioning of the solenoid circuit. It will be understood that means other than solenoid **62** may be provided for operating actuating member **34** independently of use of key **32**.

In FIGURE 4, there is shown a modification of the actuator of this invention wherein like numerals refer to like parts. In this embodiment, two solenoids **80** and **82** are provided, neither of which includes the spring return means of the previous embodiment. These solenoids would each be provided with a circuit wherein each would be only briefly energized to selectively locate the actuating member **34** in either its operative or inoperative position. With such an arrangement, the resistance to key rotation by the spring **66** of the previous embodiment would be avoided.

Thus a new and improved combined push button and cylinder lock actuator is provided.

I claim:

A cylinder lock actuator, comprising, casing means, a lock cylinder mounted within said casing means for combined rotatable and axially slidable movement relative

thereto, said cylinder being adapted to be selectively locked against rotation within said casing means and being freely slidable therein at all times, a mechanism operating member to be actuated, an actuating disc mounted on said cylinder for rotation as a unit therewith or rotation independently thereof and for sliding movement therewith relative to said casing means, said disc including an actuating lug extending axially of said cylinder and an ear extending radially thereof, lost motion pin and slot means connecting said disc and said cylinder for rotation of said disc either in response to selected rotation of said cylinder or independently thereof between an operative position juxtaposing said lug to said operating member for engagement therewith in response to sliding movemnt of said cylinder and an inoperative position locating said lug remote from said operating member to prevent such engagement, power-operated means mounted on said casing means, means connecting said power-operated means to said radial ear for rotation of said disc between said positions thereof by said power-operated means independently of rotation of said cylinder and for sliding movement of said disc with said cylinder relative to said power-operated means, and means for selectively energizing said power-operated means.

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