Nov. 22, 1966 M. M. CHECK 3,287,056

LOCK PUSH BUTTON CONTROL

Filed April 20, 1964

Fig. 1.

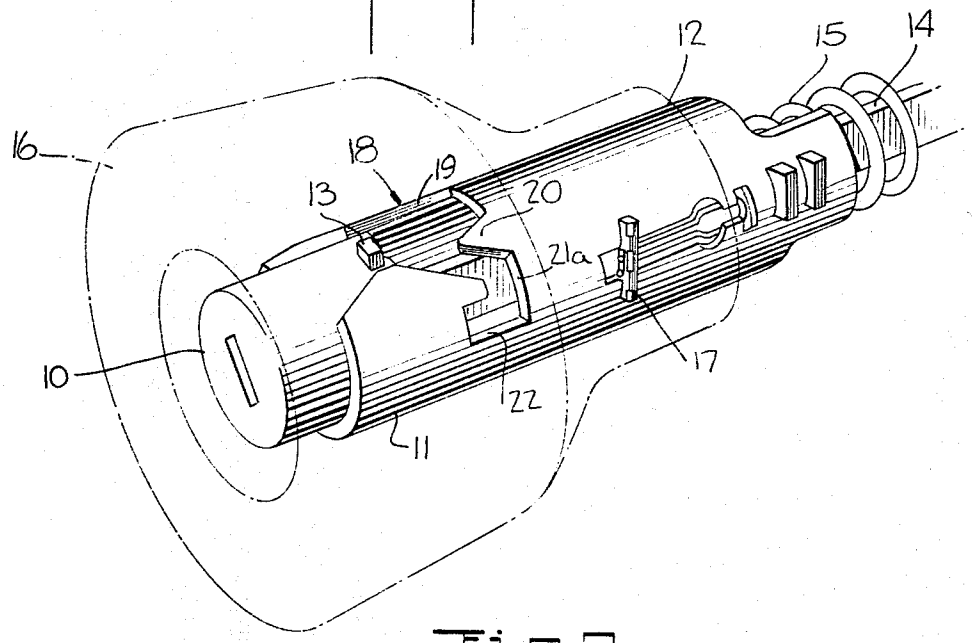


Fig. 2.

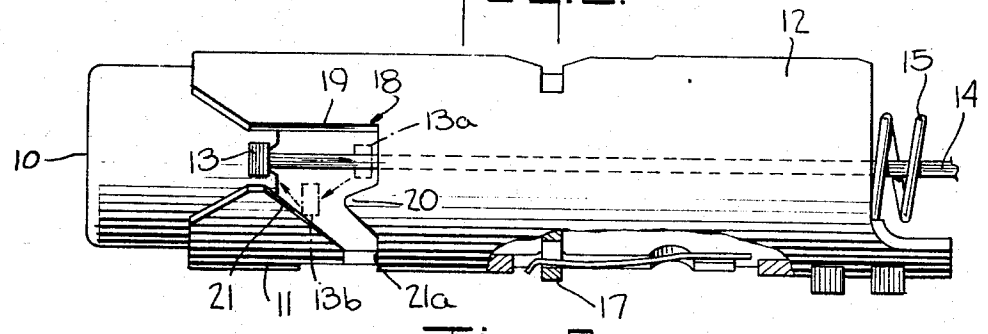
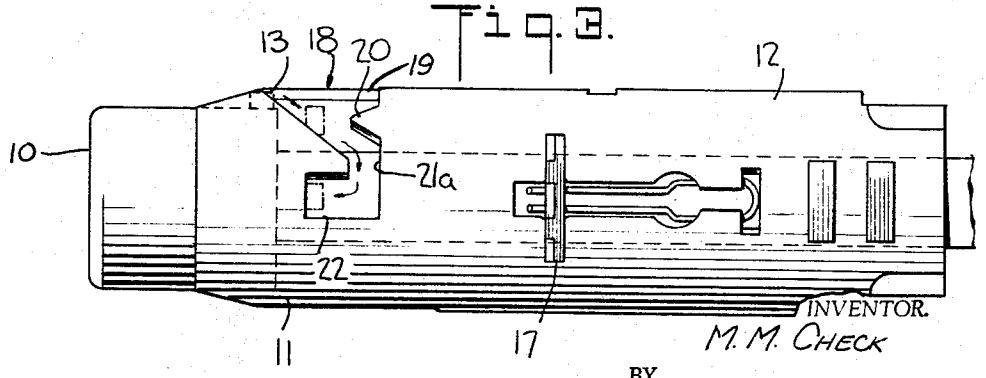


Fig. 3.



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LOCK PUSH BUTTON CONTROL

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3 Claims. (Cl. 292—347)

My invention relates to a novel control for a push button on the knob of a lock.

It will be appreciated that knobs on many locks are equipped with a locking push button that will be released from locking position either automatically or manually, depending on the manner in which the button is manipulated when moved to locking position. Thus, if the push button is simply depressed, the button will return to an outward release position when a part of the lock moves, as upon retraction of the latchbolt. On the other hand, if the push button has been rotated, the button will not be automatically released but will be dogged in locking position until a person rotates the button in an opposed direction. A push button of that kind actually is a push and turn button, and may be seen for example in the patent to Kubik, No. 2,983,537.

Unfortunately, it has been found that push buttons of the particular class sometimes are the cause of a person locking himself out of a room. It is believed that this may happen when the person, in leaving the room, grasps the knob in such a way that a finger engages the push button, inadvertently causing the button to be rotated should the person's hand slip on the surface of the knob. Whatever the cause of the rotation, the push button when rotated will be dogged in locking position, and the person will be unable to reenter the room unless he has a particular key. To reduce the possibility that a person may lock himself out through accident, I have developed an extremely novel push button control which will require that the push button be moved in a particular manner in order to achieve effective rotation of the button.

In my invention, I equip a knob and a push button with interlocking means that will restrict the push button to a particular intricate path when the button is moved in a direction away from a normal longitudinal path relatively to the knob. Then, to rotate the push button, it will be necessary to impart a particular guided motion to the button.

More particularly, I form a knob with an angular slot portion along which a lug on a push button must move in order to allow the push button to be rotated. When the push button is simply depressed, the lug will lie in a longitudinal slot portion that will hold the button against rotating an effective amount, whereby to prevent dogging of the button in locking position.

I have thus outlined rather broadly the more important features of my invention in order that the detailed description thereof that follows may be better understood, and in order that my contribution to the art may be better appreciated. There are, of course, additional features of my invention that will be described hereinafter and which will form the subject of the claims appended hereto. Those skilled in the art will appreciate that the conception on which my disclosure is based may readily be utilized as a basis for the designing of other structures for carrying out the several purposes of my invention. It is important, therefore, that the claims be regarded as including such equivalent constructions as do not depart from the spirit and scope of my invention, in order to prevent the appropriation of my invention by those skilled in the art.

Referring now to the drawing:

FIG. 1 is a perspective view showing my novel push button control,

FIG. 2 shows a plan view of my control,

FIG. 3 shows a side view.

For the purpose of describing my invention, I show in FIG. 1 of the drawing a push button **10** that is mounted for sliding and rotating movements in the outer end portion **11** of a knob spindle sleeve **12**. The push button **10** is equipped with a lug **13** so as to be guided in a particular manner relatively to the spindle sleeve **12**, as I shall describe. When depressed, the push button **10** will act through a usual push piece **14** that extends inwardly through the interior of spindle sleeve **12**, whereby to actuate lock mechanism, not shown. Yielding means such as a coil spring **15** will act in a conventional manner to press the push piece **14** and button **10** in an outward direction. A knob **16**, shown in phantom in FIG. 1, is assembled to the spindle sleeve **12**, as by a spring pressed knob retainer **17** on the sleeve. Thus, the spindle sleeve **12** in effect is a part of the knob **16**, the knob enclosing the end portion **11** of the sleeve and having an end opening that exposes push button **10**, as will be understood by those skilled in the art.

In the novel push button control that I have conceived by my invention, I form the spindle sleeve **12** with a substantially L-shaped slot, indicated generally by the numeral **18**, that will coact with the lug **13** whereby to interlock the sleeve **12** and push button **10** in a particular manner. When push button **10** is in its release position, FIG. 1, the lug **13** will lie in an outer part of the slot **18**. As shown in FIG. 2, the slot **18** has a longitudinal portion **19**, in which the lug **13** will move to the dotted line position **13***a* when the push button **10** is simply depressed. I call attention here to the fact that the knob spindle sleeve **12** has a projection **20** juxtaposed to the inner end of the longitudinal slot portion **19**, and extending at one side of slot portion **19**. Thus, the projection **20** will hold the push button **10** against rotating a substantial amount while the lug **13** is in its depressed position **13***a*.

The slot **18** further has a transverse portion **21** that extends from a medial point on one side of the longitudinal portion **19**. The transverse slot portion **21** has an angular shape that is formed in part by the projection **20**, and that has a slot part **21***a* extending beyond that projection to communicate with a short, outwardly directed detent slot **22**, FIG. 3. In effect, the slot **18** is L-shaped, while including a transverse portion **21** in a particular angular form.

When the push button **10** is simply depressed, the longitudinal portion **19** of slot **18** will coact with lug **13** to guide the button while leaving it free for an outward release movement. Thus, the slot portion **19** will allow the push button **10** to move automatically to release position in the manner that is usual in locks of the particular class.

Now let us consider what must be done in order to rotate the push button **10** so that the button will be dogged in locking position, preventing automatic release. Referring particularly to FIG. 3, it will be seen that the lug **13** must be moved as indicated by the arrows, moving from its outward position in an angular path along the slot portion **21** so as to pass behind the projection **20**. The lug **13** then must move somewhat farther in a transverse direction along slot **21***a* to the detent slot portion **22**, in which lug **13** may be held by the outward pressure due to the spring **15**. To achieve those movements, it will be necessary first to rotate the push button **10** in a particular manner while pressing the button inwardly. In other words, it will be necessary to impart a particular guided motion to the push button **10** in order to dog the button in locking position.

If we now consider that the push button **10** first is depressed, as usually happens when the button is moved accidentally, it will be seen that the lug **13** will move to the position **13***a*, FIG. 2. If push button **10** now is

rotated, the lug **13** will merely move slightly from the position **13***a* to position against the projection **20**. If the push button **10** is to rotate a substantial amount, it will be necessary that the lug **13***a* move in an outward direction beyond the projection **20** so as to enter the angular slot portion **21**, as shown at **13***b*. However, lug **13** then will be out of aligned relation to the slot portion **21***a* and can not move into the detent slot **22** unless the push button **10** is manipulated in a particular manner. Of course, spring **15** will oppose manipulation of lug **13** toward the slot portion **21***a*.

I have found that the construction I have described will make it practically impossible to rotate the push button **10** sufficiently, merely through accident, to dog the button in locking position. Actually, if the lug **13** is to be placed in the detent slot portion **22**, it will be necessary to manipulate the push button **10** in a very particular manner. If the push button **10** should be moved in any other manner, the lug **13** on the button will merely be guided into the position **13***a* or **13***b*, FIG. 2, which will not be effective to hold the push button **10** in locking position.

I believe that those persons skilled in the art will now understand that my novel push button control will allow both manual and automatic release of a locking push button, while making it extremely unlikely that a person may inadvertently manipulate the button so as to lock himself out of a room. Moreover, the construction of my novel control is extremely simple, and actually will require no more parts than are utilized in a conventional push button control. I believe, therefore, that the very considerable value of my novel control will be understood, and that the merits of my invention will be fully appreciated.

I now claim:

1. In a lock of the class described having a knob, a push button on the knob, a slot formed on a part of the knob and having a longitudinal portion in which a lug on the push button moves inwardly as said button is depressed to a locking position, and a transverse slot portion in which said lug moves as the push button is rotated to dog the button in a locking position, the improvement that comprises said transverse slot portion extending in an inwardly inclined direction from a medial point on the longitudinal slot portion, said transverse slot portion formed to have an angular shape restricting the push button lug to a particular intricate path as said button is rotated to the dogging position, and an inner end part of said longitudinal slot portion coacting with the push button lug to hold the push button against rotating

a substantial amount while said button is in a depressed position with its lug in said longitudinal portion.

2. In a lock of the class described having a knob, a push button on the knob, a substantially L-shaped slot formed on a part of the knob and including a longitudinal portion in which a lug on the push button moves inwardly as said button is depressed to a locking position, and a transverse slot portion in which said lug moves as the push button is rotated to dog the button in a locking position, the improvement that comprises said part of the knob formed with a projection extending at one side of the longitudinal slot portion and holding the push button lug against movement into the transverse slot portion when said button is in longitudinally depressed locking position, and said transverse slot portion communicating with the longitudinal portion at a point outwardly of said projection and extending from said point in an angular direction.

3. In a lock of the class described having a knob, a push button movable on the knob and equipped with a lug, and a substantially L-shaped slot formed for said lug on a part of the knob, said slot including a longitudinal portion in which said lug moves as the push button is depressed to an axially inward locking position, and a transverse portion in aligned relation to said lug when the push button is in said axially inward position and in which portion said lug may be moved incidental to rotation of the button, the improvement that comprises means extending between the longitudinal and transverse portions of the L-shaped slot on said part of the knob whereby to hold said lug against movement from the longitudinal to the transverse slot portion while said button is in said axially inward position, and said slot formed with a portion allowing clearance for movement of said lug past said means when the push button is in a position somewhat displaced longitudinally from said axially inward position, so that a rotating movement then may be utilized for placing the push button in its axially inward position.

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