

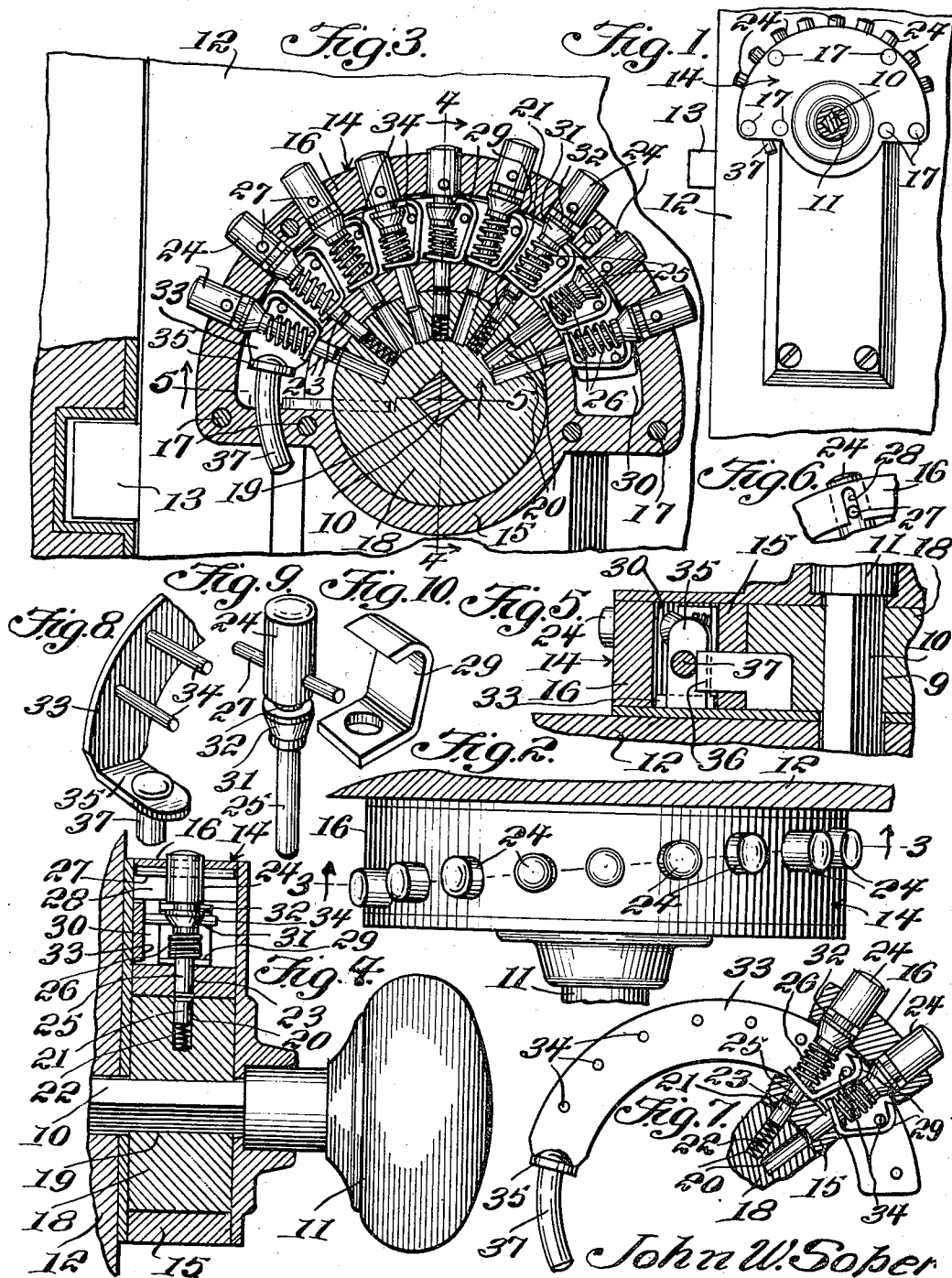
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KEYLESS LOCK

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KEYLESS LOCK

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4 Claims. (Cl. 70-54)

The invention relates to locks and more especially to keyless locks constituting refinements over the subject matter of an application for United States Letters Patent filed on or about the seventeenth day of September, 1934, Serial No. 744,412 and formally allowed May 20, 1935.

The primary object of the invention is the provision of a lock of this character, wherein depressible buttons control tumblers carried within the hub fixed to the spindle of the turning knob of a door latch so that the latch bolt can be thrown when the spindle is turned on operating certain selected buttons and in the depressing of the buttons, these will be held in depressed condition, thus it being possible to use but a single finger of the hand for successively depressing the buttons, thereby giving freedom to the other hand of a person for manipulation of the knob of the door latch.

Another object of the invention is the provision of a lock of this character, wherein on depressing the selected buttons, these can be automatically released when releasing the latching bolt of the door latch and also such buttons may be manually released for the resetting of the lock.

A still further object of the invention is the provision of a lock of this character, wherein the push buttons for controlling the lock are arranged in a novel manner so that the same can be manually operated and are set to a determined combination, thus rendering it practically impossible for an intruder to enter a room or enclosure unless having knowledge of the particular combination and the working of the lock, the lock in its construction eliminating the necessity for the use of a key or keys for locking and unlocking purposes.

A still further object of the invention is the provision of a lock of this character, wherein the structural make-up thereof is a refinement over the subject matter of an application for United States Letters Patent bearing Serial No. 744,412 and filing date of September 17, 1934, the formal allowance of this application being of the date of May 20, 1935.

A still further object of the invention is the provision of a lock of this character, which is extremely simple in its construction, thoroughly reliable and efficient in its operation, strong, durable, assuring safety against illegitimate entry to an enclosure and inexpensive to manufacture and install.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawing, which discloses the preferred embodiment of the invention and pointed out in the claims hereunto appended.

In the accompanying drawing:

Figure 1 is an elevation of a lock constructed in accordance with the invention shown applied to the knob spindle of a door latch, the spindle and adjuncts being shown in section.

Figure 2 is an enlarged top plan view of the lock.

Figure 3 is a sectional view on the line 3-3 of Figure 2 looking in the direction of the arrows.

Figure 4 is a sectional view on the line 4-4 of Figure 3 looking in the direction of the arrows.

Figure 5 is a fragmentary sectional view on the line 5-5 of Figure 3 looking in the direction of the arrows.

Figure 6 is a fragmentary elevation showing in detail one of the depressible keys with a stop pin thereon.

Figure 7 is a fragmentary elevation partly in section showing the segmental push pin release bar.

Figure 8 is a fragmentary perspective view thereof.

Figure 9 is a perspective view of one of the push buttons.

Figure 10 is a perspective view of a companion latch for the push button.

Similar reference characters indicate corresponding parts throughout the several views in the drawing.

Referring to the drawing in detail, 10 designates generally a portion of the turning spindle of a door latch of standard construction and at each end thereof is carried a hand knob 11 as usual.

It is, of course, understood that a knob or its equivalent is located at the outer side of the door as is customary and by the turning of such knob the latch may be operated for the releasing of the door, a portion of the door being indicated at 12 and the latch bolt at 13 for the latch carried by said door.

Associated with the spindle 10 of the latch on the door is the keyless combination lock which comprises a substantially sector shaped casing 14 having a circular rim-like center 15 which is disposed concentrically to the spindle 10 when the casing 14 is made secure upon the door 12 at the outside thereof. This casing 14 constitutes an outer half circular shaped edge flange 16 concentric to the rim center 15 at the upper half thereof. The casing 14 is made secure to the door 12 by fasteners 17 in its proper relation to the spindle 10 of the door latch.

Fitting the rim-like center 15 of the casing 14 and freely rotatable therein is a hub 18, it having a squared center opening 19 for the spindle 10 which is of a like shape so that the hub 18 will turn with the spindle when the same is free for operating the door latch. Provided radially in the hub 18 is a series of tumbler sockets 20 and in certain of these are confined spring pressed

tumblers 21 while the remainder of the sockets 20 are vacant. These tumblers 21 under the springs 22 acting thereon project into openings 23 in the rim center 15 and in this fashion the spindle 10 is held against turning movement. When the tumblers 21 are freed from the openings in the rim center 15 the hub 18 is free for the turning of the spindle 10 so that the door latch can be operated for the unlatching of the door 12. Normally the latch bolt 13, which is controlled by the spindle 10, is in latching position in the door frame and the door 12 latched.

Radially arranged in the casing 14 and slidably fitting the flange 16 of said casing are spaced depressible buttons 24 which are projected from the casing 14 and their stems 25 project through the rim center 15 to align with the sockets 20 in the hub 18 and those stems 25 of these buttons 24 confronting the tumblers 21 will move the same when the buttons 24 of the proper combination set of such tumblers are depressed so that the hub 18 is free for the turning of the knob 11 and thus the door latch released.

The stems 25 of the push buttons 24 have surrounding the same coiled springs 26, these acting upon the buttons 24 to project the same outwardly of the flange 16 of the casing 14 and such buttons 24 are manually depressed against the resistance of the springs 26 in the operation of the lock. On depressing the buttons 24 which do not coact with the tumblers 21 their stems 25 enter the vacant sockets 20 and thus augment the locking of the hub 18 by the tumblers 21 so that it is impossible for the operation of the lock to release the door latch. The buttons 24 carry stop pins 27, these playing in notches 28 and limit the projecting of the said buttons outwardly of the casing 14.

Loosely fitted with the stems 25 of the buttons 24 are individual latching dogs 29, these confined within a space 30 provided in the casing 14 between the rim center 15 and the flange 16 of said casing. The dogs 29 normally play against beveled portions 31 formed on the buttons 24 next to annular seats 32 in said buttons so that these dogs 29 will be caused to freely ride within the seats 32 to lock the buttons 24 when depressed, the springs 26 being active upon the dogs 29 to urge the same into locking position and normally in contact with the beveled portions 31 of the buttons to be in a position to be guided into the seats 32 when the buttons 24 are depressed in the working of the lock. These buttons 24 when depressed will be individually locked as will be apparent from Figure 3 of the drawing and thus held in this position until released.

Operating within the space 30 at one side of the dogs 29 is a segmental shaped releasing bar 33, it having pins 34 in the path of the dogs 29 so that these dogs when engaging the seats 32 in the buttons 24 can be released for the freeing of the said buttons after the same have been depressed. The bar 33 at one end has an offset ear 35 in the path of a striker 36 projected from the hub 18 into the space 30 so that when the hub is free and on the turning of the spindle 10 this striker 36 will engage the offset ear of the bar 33 for moving the latter to effect the automatic release of the depressed buttons of the lock. This offset ear 35 of the bar 33 carries a push terminal 37 playing through a suitable clearance in the casing 14 at one side of the rim center 15 so that it is exposed and can be manually acted upon to move the bar 33 for the hand release of the but-

tons 24 when the same are locked in depressed position.

The springs 26 about the stems 25 of the buttons 24 are effective for tensioning the dogs 29 and the bar 33.

It should be apparent from Figure 3 of the drawing that the combination of the lock can be changed by rearranging the tumblers 21 within the sockets 20 and this is effective at the option of the user of the lock to alter the set combination thereof and the range of combinations being extensive.

It is required that to successfully operate the lock the person must have knowledge of the combination so that the buttons 24 active upon the set arrangement of the tumblers 21 within the hub 18 can be controlled to release these tumblers from the rim center 15 of the casing 14 to free the said hub 18 so that the spindle 10 can be turned to retract the bolt 13 of the door latch for the freeing of the door.

To operate the lock a person can individually operate the proper buttons 24 controlling the set combination of the lock as these buttons when individually depressed will be latched in that position and in this manner eliminating the necessity of holding the buttons depressed so that the hands of a person are free for manipulating the knob 11 to turn the spindle 10 of the door latch and the opening of the door.

In the working of the lock it is necessary to depress those buttons 24 controlling the tumblers 21 so that these will free the hub 18 for the turning thereof within the casing 14 and by turning the spindle 10 the bolt 13 of the door latch can be retracted for the unlatching of the door.

What is claimed is:

1. A lock of the character described comprising a turning hub for fitting upon a door latch spindle to move therewith, changeable tumblers carried by said hub and normally locking it against turning movement, actuator buttons, certain of these controlling the tumblers to free the hub for turning movement, means for latching the buttons depressed and means controlled by the hub when freed for automatically controlling the first-named means to release the buttons when depressed.

2. A lock of the character described comprising a turning hub for fitting upon a door latch spindle to move therewith, changeable tumblers carried by said hub and normally locking it against turning movement, actuator buttons, certain of these controlling the tumblers to free the hub for turning movement, means for latching the buttons depressed, means controlled by the hub when freed for automatically controlling the first-named means to release the buttons when depressed and means for manually operating the last-named means.

3. A lock of the character described comprising button controlled means for locking a door latch spindle against turning movement, means for latching the said means when actuated and means controlled by the spindle for the automatic releasing of the last-named means.

4. A lock of the character described comprising button controlled means for locking a door latch spindle against turning movement, means for latching the said means when actuated, means controlled by the spindle for the automatic releasing of the last-named means and means for manually releasing the button controlled means.

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