

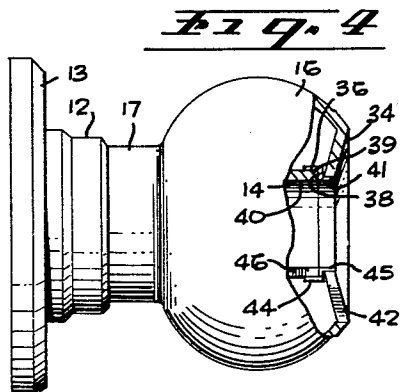
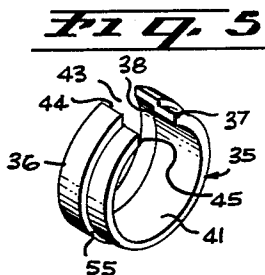
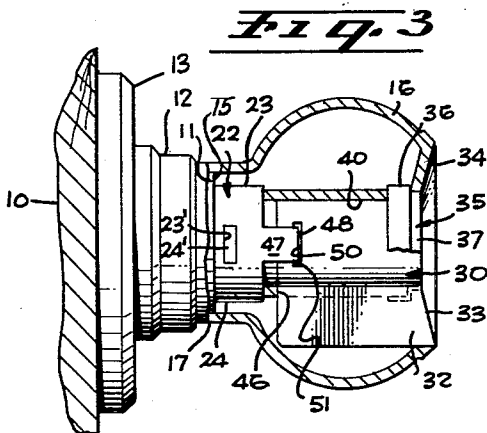
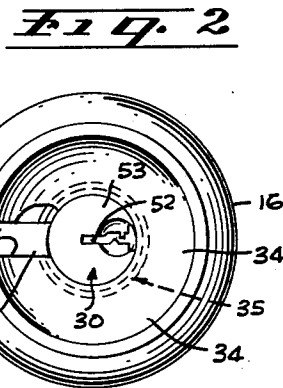
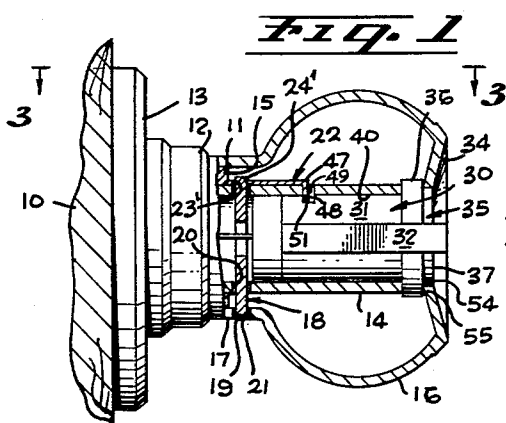
Sept. 22, 1964

F. J. RUSSELL

3,149,485

SPLIT SPINDLE CAP

Filed Dec. 6, 1962



FRED J. RUSSELL
INVENTOR.

BY
Beehler & Shanahan
ATTORNEYS

1

3,149,485

SPLIT SPINDLE CAP

Fred J. Russell, 3800 Don Felipe Drive,
Los Angeles, Calif.

Filed Dec. 6, 1962, Ser. No. 243,214

2 Claims. (Cl. 70—224)

The application has reference to door locks of the type wherein a key-operated mechanism is mounted in the spindle and wherein a hand hold and, in particular, a door knob surrounds and is nonrotatably attached to the spindle.

For some time, the trend in the manufacture of locks has been to make them appreciably more compact than earlier practice warranted and this trend toward compactness has stressed the mounting of the locking mechanism and particularly the customary key-operated mechanism centrally within the knob. Recently, certain more improved lock structures have carried the trend of development still further to the extent of modifying the hand hold or knob so that it provides ample space within the interior and at the same time is so mounted upon the spindle that there is a two point stabilizing support for the knob on the spindle.

Whereas such a construction has been made use of for supporting the face end of the knob on the spindle, the employment of such construction has impaired the prospect of removing the key-operated mechanism for rekeying without disassembling the knob and the associated structure from the spindle prior to removal of the key-operated mechanism.

It is therefore among the objects of the invention to provide a new and improved door lock construction featuring a hand hold supported upon the outer end of the spindle wherein there is employed a stabilizing connection of such construction that it permits the key-operated mechanism to be withdrawn past it without in any manner disassembling any of the other parts of the device.

Another object of the invention is to provide a new and improved stabilizer connection for mounting the outer end of a hand hold upon a spindle of such character that, while the stabilizer connection remains in place, a key-operated mechanism can be withdrawn through it and subsequently replaced without disturbing the knob mounting.

Still another object of the invention is to provide a new and improved stabilizing connecting device for mounting the outer end of a knob on a spindle which can be permanently anchored in place but which is of such construction that, without in any manner disturbing the permanent anchoring of the stabilizing device, a key-operated mechanism can be withdrawn and replaced.

Still further among the objects of the invention is to provide a new and improved stabilizer connection for mounting the outer end of a hand hold upon a spindle where, at the same time, the knob neck is separately supported by a stationary portion of the lock mechanism thereby providing a multiple point support for the knob, the stabilizer construction being such that it enables removal and replacement of the key-operated mechanism through the outside face of the knob without disturbance of the knob mounting at either end.

With these and other objects in view, the invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter set forth, pointed out in the appended claims and illustrated in the accompanying drawings.

2

In the drawings:

FIGURE 1 is a longitudinal, sectional view of the device showing a hand hold in place.

FIGURE 2 is an end elevational view of the device shown in FIGURE 1.

FIGURE 3 is a longitudinal view, partially broken away, taken on the line 3—3 of FIGURE 1.

FIGURE 4 is a side-elevational view partially broken away showing the structure remaining after the key-operated mechanism has been removed.

FIGURE 5 is an end perspective view of the stabilizer connection.

In an embodiment of the invention chosen for the purpose of illustration, there is shown certain stationary portions of a door lock mounted upon a door 10, the portions for convenience being revealed as a bushing 11 surrounded by a trim sleeve 12 and a rosette 13, these being substantially conventional construction. A spindle 14 tubular in form is rotatably mounted in the bushing 11 and extends for a substantial distance outwardly relative to an edge 15 of the bushing 11.

Upon the spindle there is mounted a hand hold here shown as consisting of a knob 16 having a neck 17 rotatably supported upon the exterior of the bushing 11 and nonrotatably attached to the spindle 14 by means of a keeper member indicated generally by the reference character 18. Details of the keeper member and its operation are disclosed in copending application, Serial No. 240,986, filed November 29, 1962. More particularly, the keeper member 18 consists of a retainer end 19 which extends slidably outwardly through a hole 20 in the spindle 14 and through a hole 21 in the neck 17 which is in radial alignment with the hole 20. A resilient retainer indicated generally by the reference character 22 includes side portions 23 and 24 partially surrounded and enveloping the spindle 14 and possessed of an opening 23' into which projects a boss 24' of the keeper member 18. By bearing against shoulders (not shown) immediately adjacent the boss 24', the resilient retainer member 22 serves to hold the keeper member 18 in a downwardly or extended position within the holes 20 and 21 thereby to retain the knob 16 nonrotatably in engagement with the spindle 14.

A key-operated mechanism indicated generally by the reference character 30 consists of a cylindrical casing 31 and a pin tumbler housing 32 extending radially outwardly from one side of the casing 31 and, in fact, forming a part of the casing. In the chosen embodiment, the pin tumbler housing has an oblique front edge 33 having the same angular disposition as the exposed face of a front wall 34 of the knob as shown advantageously in FIGURE 3.

To provide a stabilizing support for the front end of the knob 16, there is provided a footing ring indicated generally by the reference character 35 and shown in perspective in FIGURE 5. The footing ring 35 has a relatively large substantially annular flange 36 extending around and attached to the outermost end of the spindle 14. Adjacent the annular flange 36 is a smaller substantially annular flange 37 separated from the larger flange 36 by a shoulder 38 which engages the outermost or end edge 39 of the spindle 14. As is observable in FIGURE 4, the inside wall 40 of the spindle is in axial alignment and is of substantially the same diameter as the inside wall 41 of the annular flange 37.

Further still, as is clearly apparent in FIGURE 4, the front wall 34 of the knob is provided with a cutout or recess 42 which corresponds in shape, size, and location with the oblique front edge 33 of the pin tumbler housing 32. Also accommodating the pin tumbler housing 32 is a slot indicated generally by the reference char-

3

acter 43 which is formed by opposite walls 44 extending through the annular flange 36 and opposite walls 45 extending through the annular flange 37. Moreover, there is also provided a slot 46 in the spindle 14 likewise to accommodate the pin tumbler housing 32.

For retaining the key-operated mechanism 30 in assembled or operating condition, the retainer member 22 is provided with an extension 47 terminating in a downwardly extending tab 48 as shown in FIGURE 1. The tab 48 extends through a hole 49 in the spindle 14 which is in alignment with a milled slot 50 in the cylindrical casing 31 which provides a shoulder or configuration 51. The tab 48 is preferably made of such length that the portion of it extending into the milled slot 50 is slightly shorter than the thickness of the neck 17 or in any event slightly shorter than the portion of the keeper member 18 which extends through the hole 21 in the neck 17.

When it becomes desirable to remove the key-operated mechanism 30, a key (not shown) is ordinarily inserted into a keyway 52 in an appropriate cylinder plug 53 and the key rotated. The keeper member 18 is then pressed inwardly by pressure applied to the retainer end 19 until the tab 48 is disengaged from the shoulder 51. The key-operated mechanism 30 is then withdrawn, by making use of the appropriate conventional key, outwardly in an axial direction through the inside wall 40 of the spindle 14 and the inside wall 41 of the footing ring 35. During passage of the key-operated mechanism 30 outwardly, the pin tumbler housing 32 slides through the slot 43 in the footing ring and also through the recess 42 in the front wall 34 of the knob 16. In this fashion, the key-operated mechanism 30 can be entirely removed without in any manner disturbing the mounting of the knob 16 upon the outer end of the spindle 14. During this operation, the wall 54 of a central hole in the front wall 34 remains in engagement with the exterior of the flange 37 and an inner portion of the wall remains in engagement with an external shoulder 55 separating the flange 37 from the flange 36. From the foregoing comments it will be clear that the front end stabilization of the knob 16 remains firm as well as does the stabilized mounting of the neck 17 of the knob 16 upon the exterior of the bushing 11. Consequently, this relationship continues undisturbed as well when the key-operated mechanism 30 is returned or when a new key-operated mechanism 30 is inserted through the front wall 34 of the knob 16 with the pin tumbler housing 32 again sliding through the recess 42 and the slot 43 until the front face of the cylinder plug and the front edge 33 of the pin tumbler 32 housing are again flush with the front surface 34 of the knob 16.

4

While the invention has herein been shown and described in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices.

Having described the invention, what is claimed as new in support of Letters Patent is:

1. In a door lock, a hub, a tubular spindle mounted in the hub, a hand hold having a nonrotatable engagement with the spindle, a face on said hand hold having an opening therein in alignment with said spindle and a footing ring attached to the outer end of the spindle, said footing ring having an annular flange extending into the opening in said face, a key-operated mechanism having a tumbler housing in releasable engagement with said spindle, said key-operated mechanism extending outwardly into the opening of said hand hold, said footing ring having a cutout through one side thereof of breadth not less than the breadth of said tumbler housing where it intersects said hand hold face opening, whereby said key-operated mechanism is adapted to be inserted into and removed from said spindle without removal of the footing ring from the spindle.

2. In a door lock, a hub, a tubular spindle mounted in the hub, a hand hold having a nonrotatable engagement with the spindle, a face on said hand hold having an opening therein in alignment with said spindle and a footing ring attached to the outer end of the spindle, said footing ring having an annular flange extending into the opening in said face, a key-operated mechanism having a tumbler housing in releasable engagement with said spindle, said footing ring having a cutout through one side thereof of breadth not less than the breadth of said tumbler housing where it intersects said footing ring, said face having a cutout in communication with the opening in said footing ring corresponding in shape and size to the cross-sectional shape and size of said key-operated mechanism where it intersects said hand hold face opening, whereby said key-operated mechanism is adapted to be inserted into and removed from said spindle outwardly through said face without removal of the hand hold and the footing ring from the spindle.

References Cited in the file of this patent

UNITED STATES PATENTS

2,413,733 Schlage ----- Jan. 7, 1947