April 3, 1951 R. C. CERF, JR 2,547,439

DOORKNOB

Filed Nov. 27, 1948

FIG. 1.

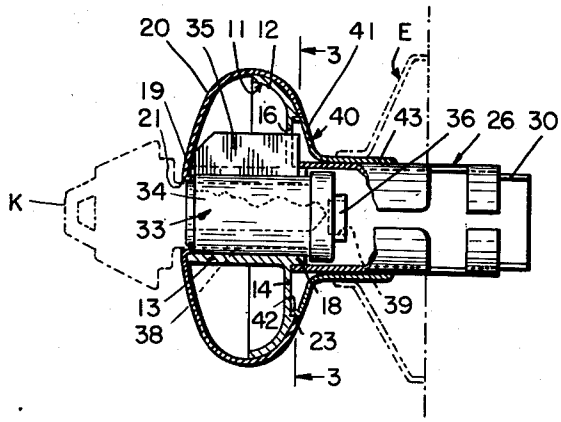


FIG. 2.

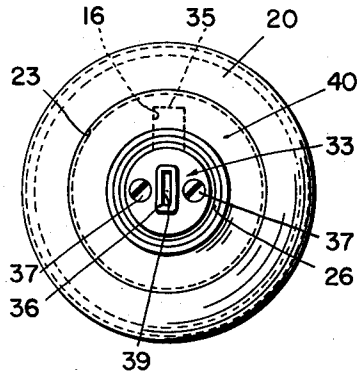


FIG. 3.

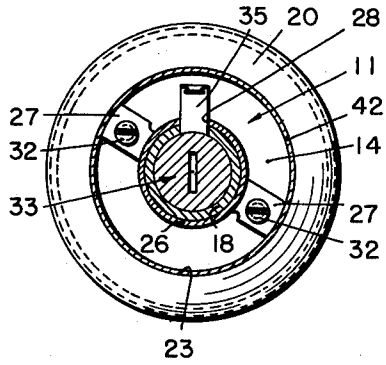


FIG. 4.

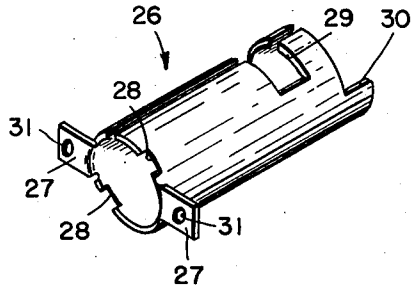
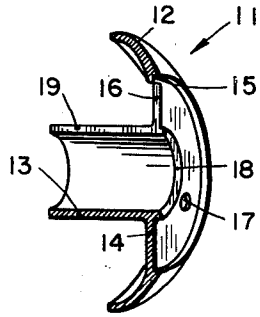


FIG. 5.



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DOORKNOB

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3 Claims. (Cl. 70—224)

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This invention relates to a door knob and in particular to an assembly of a fabricated door knob, a key-operated lock and a spindle.

One object of the invention is to provide an economical and simple assembly for a fabricated door knob and spindle adapted to enclose a key-actuated axially disposed lock mechanism. Another object is to provide a door knob assembly, including a key-actuated lock mechanism and a spindle which, after installation in a door set, cannot be disassembled until the assembly is released and disengaged from an associated latching mechanism accessible only from the opposite side of the door.

These and other objects of my invention are attained by the illustrative structure disclosed in the following description and the accompanying drawings in which:

Figure 1 is a side elevational view partly in section showing the door knob, lock and spindle assembly of my invention;

Figure 2 is an inside end elevational view of the same;

Figure 3 is a cross-sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a perspective view of the spindle; and

Figure 5 is a perspective cross-sectional view of the knob body.

In general, my invention consists of a knob body over which is formed an outer covering shell with a key-operated locking mechanism positioned axially in the knob, with a tubular spindle extending from the knob body and with a shell closure member slidably mounted on the spindle. Referring to the drawings, the knob body 11 which is preferably made as a rigid die-cast member consists of a rim portion 12 which, as shown, follows at least in part, the inside contour of the outer shell of the knob and is provided with a central hub 13 which is attached to the rim portion by the disk member 14 which is disposed inwardly from the rearward opening of the shell at the contact edge 15 with said shell. A sectoral opening 16 is provided in the disk 14, this opening continuing into the hub forming the slot 19, this opening and slot being arranged to admit and position a portion of the key-actuated lock mechanism as will be described below. The hub 13 is preferably provided with a hub extension 18 on the rearward end thereof. (In this description, the "rearward" positions are those adjacent or nearest the door on which the knob is intended to be installed, and the "forward" positions are those adjacent the outer or keyhole face of the knob.)

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The outer covering shell 20 consists generally of a spun metal spheroidal knob, covering and in contact with the rim portion of the knob body 11. This shell is provided with an in-turned margin 21 adjacent the forward end of the hub 13, and has a coaxial rearward opening, larger than said hub, making contact with the knob body at the contact edge 15.

The tubular spindle 26 consists of a metal tube or tubular member provided at its attached end with lateral extending ears 27 by which the spindle is rigidly fastened to the face of the disk member 14, screw holes 31 being provided in the ears and screws 32 being threaded into threaded holes 17 properly positioned on the disk 14. The attached end of the spindle is further provided with notches 28 disposed on diametrically opposite sides, which notches are adapted to engage and hold the spindle in fixed relation to the pin tumbler chamber 35 of the key-operated lock mechanism. The opposite end of the spindle 26 is provided with a retractor lifter 30 and also with a circumferential retainer slot 29 which is adapted to turnably hold the spindle to a latch mechanism housing (not shown) to prevent removal of the assembly.

The key-operated locking mechanism 33 is preferably of the form known as a pin tumbler and cylinder lock consisting of a cylindrical casing 34 enclosing a key plug 38 and having a pin tumbler chamber or extension 35 extending laterally from the outer wall of the cylindrical casing 34. The key plug 38 which is adapted to be turned by the key K is retained in the cylindrical casing 34 by the turning bar connector 36 which is attached to the end of the plug 38 by the screws 37, the turning bar (not shown) being turned by engagement in the bar slot 39.

The shell closure member 40 consists of a conical disk 41 having a cylindrical in-turned rim 42 which is adapted to fit closely within the edge of the rearward opening 23 of the outer covering shell at the recessed contact edge 15 in the knob body, being held in position by frictional engagement. The shell closure member is provided with a hub 43 which is adapted to slide on the spindle 26.

The parts of my assembly are put together in the following manner. A tubular "blank" for the outer covering shell 20 is spun over the rim portion 12 of the knob body 11, the in-turned margin 21 being formed on the forward side, this margin being turned inside the hub 13. The rearward opening in the shell terminates in the contact edge 15 which adjoins the corresponding edge of the knob body. The disk 14 is disposed a short

distance inside the rearward opening 23 of the shell 20. The knob body 11 and the outer shell 20 are spun tightly together to form a substantially unitary body. The pin tumbler and cylinder lock mechanism 33 is then inserted through the rearward opening 23 with the end of the pin tumbler chamber 35 abutting the inside of the outer shell, and the key end of the cylindrical casing 34 abutting the in-turned margin 21 of the shell 20. The spindle 26 is then arranged over the hub extension 18, with one or the other notches 28 positioning the spindle angularly relative to the pin tumbler chamber 35, the spindle then being rigidly attached to the disk 14 of the body by the screws 32 in the ear holes 31 and the threaded holes 17 in said disk. The shell closure member 40 is then slipped over the free end of the tubular spindle 26 with its cylindrical rim frictionally engaging the edge of the rearward opening 23 of the shell 20 at the contact edge 15 of the knob body 11.

The advantages of my knob assembly will be apparent. The parts are readily fabricated by standard metal working operations, and, when assembled, the knob cannot be removed from the outside until released through removal of a retainer in the retainer slot 29 in the spindle 26. The rosette E shown in broken lines in Figure 1 is attached from the inside or opposite side of the door from which the knob extends, and effectively prevents tampering with the shell closure member after the knob is fully assembled and mounted on the door.

I claim:

1. A door knob, lock, and spindle assembly comprising a knob body having a rim portion adapted to support an outer covering shell, said body having an integral coaxial hub extending from the front to the back of said knob and adapted to hold the cylindrical portion of a pin tumbler and cylinder locking mechanism, and a disk portion connecting said hub to said rim portion, said hub and said disk portion having sectoral openings adapted to receive the pin chamber of said locking mechanism; an outer covering shell for said body, said shell having an in-turned margin around a forward coaxial opening adapted to communicate with said hub and with a coaxial rearward opening larger than said hub; a tubular spindle projecting outwardly and having laterally extending ears adapted to be removably attached to the disk portion of said knob body; a pin tumbler and cylinder lock mechanism having a cylindrical casing disposed in said hub and having a pin tumbler chamber extending from said casing in said sectoral opening, said lock mechanism being held longitudinally between said shell and the attachment end of said tubular spindle; and a removable closure member for the rearward opening of said shell, said closure member having a hub adapted to slide over said spindle, and having a rim adapted to fit into the rearward opening of said shell.

2. In a door knob and spindle assembly, a knob body having a rim portion adapted to support an outer covering shell, said body having an integral coaxial hub adapted to hold a cylinder type locking mechanism, and also having an integral disk portion connecting said hub to said rim portion; and a tubular spindle projecting outwardly from said body and coaxial with said hub having laterally extending ears adapted to be removably attached to the disk portion of said knob body.

3. In a door knob and spindle assembly, a knob body having a rim portion adapted to support an outer covering shell, said body having an integral coaxial hub adapted to hold a cylinder type locking mechanism, and also having an integral disk portion connecting said hub to said rim portion; a tubular spindle projecting outwardly from said body and coaxial with said hub, said spindle having laterally extending ears adapted to be attached to the disk portion of said knob body; and a covering shell over said knob body.

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