Sept. 22, 1959 F. E. BEST 2,904,989

KEY-IN-KNOB LOCK

Filed Aug. 4, 1955

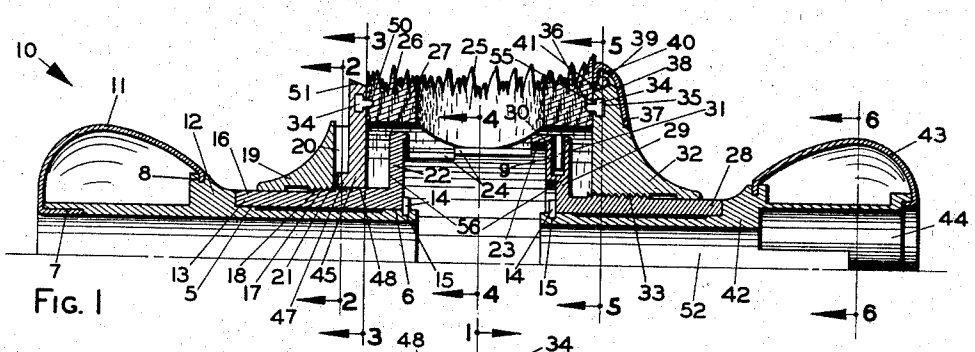


FIG. 1

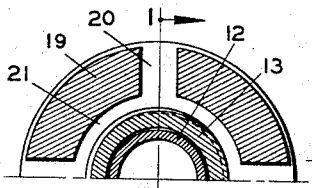


FIG. 2

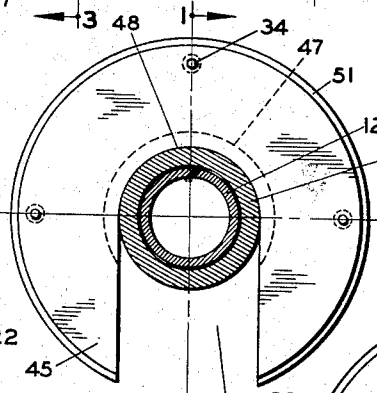


FIG. 3

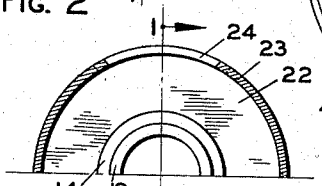


FIG. 4

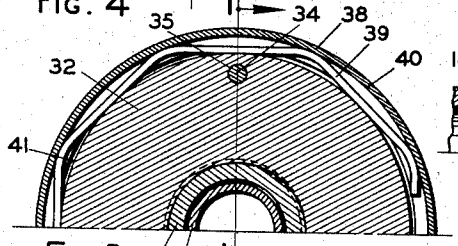


FIG. 5

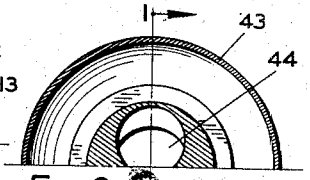


FIG. 6

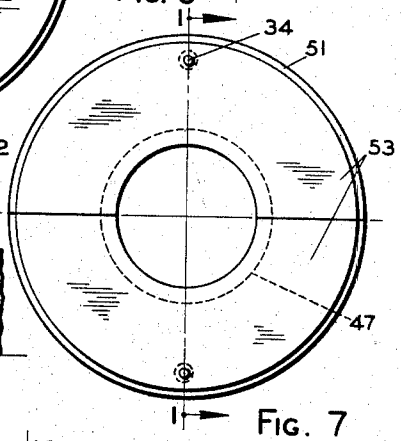


FIG. 7

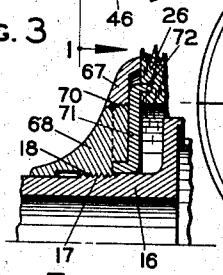


FIG. 11

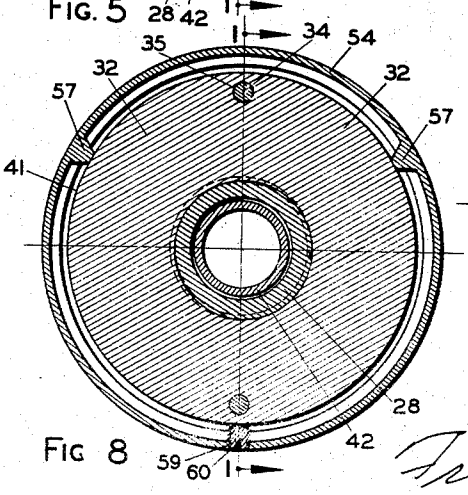


FIG. 8

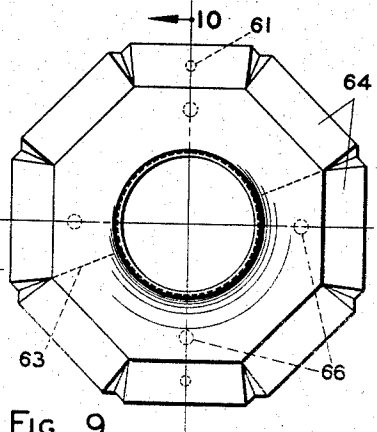


FIG. 9

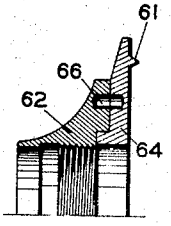


FIG. 10

Frank Ellison Best INVENTOR

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2,904,989

# KEY-IN-KNOB LOCK

Frank Ellison Best, Indianapolis, Ind.

Application August 4, 1955, Serial No. 526,370

7 Claims. (Cl. 70—452)

My invention pertains to improvements in locks and more specifically to key-in-knob lock means and methods of installation of the same within and upon a door and it pioneers a basically new concept in lock structure.

A basic concept of my invention that finds embodiment herein is a compact factory-assembled key-in-knob lock unit, comprising a longitudinal frame element mounting knobs and roses thereon, all encompassing the conventional mechanisms thereof and all adapted for instant insertion to its middle into a hole provided therefor in a door in its installation therein in conjunction with that of rose support means of the conventional U-shape or split-ring type, which are of larger diameter than the said hole in the door and which are inserted between the roses and the door and act as hole-bridging supports for the all rigidifying adjustments of said roses.

Another basic concept of my invention realized herein relates to the use of a wide variety of interchangeable embellishing slip-over-knob escutcheons that can be instantly slipped over said knobs and snapped into place or otherwise quickly secured to said roses, rose supports, or directly to said door itself, and forming, in conjunction with said central rose, the embellishing trim of the knob.

Other objects of my invention are:

(1) Simplicity and reduced time and cost of installation.
(2) Reduced cost of manufacture and briefer instruction sheets.
(3) Reduced inventory requirements of factory, distributor, and retailer.
(4) Ease of application and removal of trim without removal of knobs.
   A. Upon installing lock.
   B. When door is redecorated.
   C. For refinishing, replacing or change of pattern.
(5) Reduction of the size of shipping cartons and shipping costs.
(6) The elimination of all exposed spanner holes and exposed screws that bark the knuckles, all of which also mar the beauty of the ensemble.
(7) The dispensing with the use of all special tools, that are apt to get lost, and thus make the removal of the lock resultingly difficult, and the required use of only an ordinary screw driver or wrench in assembly.
(8) The effective stopping of tampering with the factory-adjusted mechanisms thereof by uninformed persons, all of which guarantees better lock operation over more years.
(9) The reduction of maintenance cost and repairs.
(10) The lengthening of the life expectancy of the ensemble.

Other objects will become apparent as the description unfolds.

I illustrate my invention by means shown in the accompaning drawings, in which:

*General description of views*

Figure 1 shows a partial axial section of the pertinent



elements of my key-in-knob lock ensemble 10, coincident with a fragmentary horizontal section of a door 26 prepared for its accommodation, and in and upon which it is shown mounted, as taken on line 1—1 of Figures 2 to 8 inclusive.

Figures 2, 4, 5, and 6 are partial cross sections of the same as taken on lines 2—2, 4—4, 5—5, and 6—6 respectively of Figure 1.

Figures 3 and 7 are views of alternate constructions used selectively as viewed in elevation projected to plane 3—3 of Figure 1.

Figure 8 shows an alternate slip-over-knob prongs-and-set-screw-secured escutcheon 54 selectively adapted to replace the push-on slip-over-knob escutcheon means 38 of Figure 5, as taken on line 5—5 of Figure 1.

Figures 9 and 10 are orthographically related elevation and partial cross section 10—10 Figure 9, respectively of alternate rose and rose support means.

Figure 11 shows an alternate slip-over-knob escutcheon and rose support to replace rose 19 and rose support 45 of Figure 1.

*Detailed description*

Inner knob shell 11 is mounted rigidly on inner knob spindle 12, at 7 and 8, which is, in turn, mounted in inner hub frame 13 to a free turning fit thereon at 5 and 6 and retained endwise therein by washer 14 in groove 15 in spindle 12.

Inner hub frame 13 comprises a hollow cylindrical stem 16 having a threaded portion 17 mating with threaded portion 18 of inner rose 19 having radial grooves 20 and an annular recess 21 therein.

Inner hub frame 13 expands into a flanged disc 22 which terminates in a cylindrical hub portion 23. Said hub portion 23 is cut away in part to form an opening 24, best seen in Figures 1 and 4, for the reception of tube and bolt members not shown as not pertinent to this showing, but which are housable in hole 25 in door 26.

Said cylindrical hub portion 23 is loose fitting in cylindrical hole 27 in door 26. It also is joined to flange 29 of outer hub frame 28 by mating surfaces 30; and a number of C-dowels 31 driven into holes 9 retains portion 23 and flange 29 rigidly together. These can be removed by a locksmith, but not by a less skilled or less tool-equipped person.

Rose 32 carries a couple of pins 34 disposed 180° O. C., swedged in holes 35 at 55 therein which are preferable forced into the door 26 at 36 as is usual in the installation of ensemble 10 in said door by the final tightening of inner rose 19. Rose 32 also has a recess 37 to accommodate a push-on escutcheon means 38 which retains a spring means 39 in annular recess 40.

Rose 32 has a conical outer surface 41 which cooperates with spring means 39 in retaining said escutcheon means 38, which may be an annular ring as shown or of any desired escutcheon size, shape, finish, etc., thereon.

Outer hub frame 28, mounts therewithin the outer knob spindle 42 which is retained in a free rotative fit therewithin by washer means 14 in annular groove 15.

Said spindle 42 carries outer knob shell 43, a lock core receptacle 44 and cylindrical receptacle 52 for the reception of mechanisms not shown as not pertinent.

Between the door 26 and inner rose 19 is trapped a U-shaped rose support 45 which is also annular shaped except for a cut-away portion 46, Figure 3.

This rose support 45 has an arcuate extension 47 which mates with annular recess 21 in inner rose 19 and the outer cylindrical surface 48 of inner hub frame 13. It also carries pins 34, similar and similarly disposed and swedged in position as pins 34 of the rose 32. These are preferably forced into the door 26 at 50. It also terminates in a conical surface 51 similar and preferable equal

in all respects throughout its arcuate extension to conical surface **41** for the similar retension of the inner escutcheon means which preferably is similar to means **38**.

Escutcheons means **38** has an inner diameter larger than that of knob shells **11** and **43** so that it can be slipped over either knob shell after the device has been assembled to the door **26** as shown.

Knob shell **11** and rose **19** are of over all outside diameters such as to slip through hole **27** in the door **26**.

*Installation*

The installation of the device is as follows:

As the said device is taken out of its shipping carton, the roses **19** and **32** are found to be clear back far away from the door position shown, nearly as far as the mating threads will permit and still engage.

The assembly is complete as shown except that the two slip-over-knob escutcheon members **38** and the U-shaped member **45** will be packed separately in the said carton.

Instructions will tell the installer to put the unit along side of the door edge and adjust the outer rose **32** so that the extremities of cylindrical hub portion **56** are equi-distant from the edges of the door, then insert the unit from the outer knob side inserting the inner knob and inner rose through the hole **27** in the door **26**.

Next put the U-shaped rose support member **45** in place and tighten up the inner rose **19** finally using a screw driver as a wrench in radial grooves **20**.

Last of all snap on slip-over-knob escutcheon means **38** and the assembly is complete.

Figure 7 shows two half-rings **53** which form an approved alternate for U-shaped rose support **45** of Figure 3.

Figure 8 shows a fragmentary portion of an escutcheon **54**, having projecting lugs **57** and a set screw **60** in tapped hole **59** therein adapted to replace escutcheon means **38** as an alternate form particularly in the instance of larger escutcheons.

Figures 9 and 10 show orthographically related elevation and partial cross section **10—10**, Figure 9, respectively of alternate rose and rose support means jointly illustrating a trim ornamentation by a suggested pattern that is designed to conceal the fact that said rose support means must be of the split-ring type to completely encircle the frame and be inserted there-around after the knobs and roses are pre-assembled in place and extended outwardly beyond the rose to bridge the hole for rose support.

Holes pre-drilled in the door preferably accommodate pins **61** to keep the rose support design properly oriented and an artistic workman in tightening combined rose and nut **62** with a wrench will stop with the corners in alignment to complete the artistic assembly. Dotted line **63** shows the division between the two similar half-rings **64** composing said rose support means.

It is desirable, where possible, to dispense with the slip-over-knob escutcheon means, and this can be accomplished by beautifying half-ring rose support means as is done in Figures 9 and 10.

Another thing that is desirable is to use the same roses and rose support means on both sides of the door, but this encounters the problem that the inner rose must be free to turn under wrench pressure to properly rigidify the ensemble, while the outer rose, must be non-rotatively mounted to prevent loosening of the ensemble from the outside.

This is accomplished by putting a number of matching blind dowel holes **66** in both rose and rose support. Use interlocking dowel pins therein on the outside and no dowel pins on the inside.

Figure 11, shows a fragmentary sectional view, similar to the showing a little to the left of the middle of Figure 1, of an alternate treatment of the slip-over-knob escutcheon **67** which is screw adjusted to rose **68** which is similar to rose **19** except that it joins slip-over-knob escutcheon **67** in mating thread **70** and the form of the U-shaped rose support member **71** is slightly modified to provide two integral press-in points **72** 180° O.C. to secure it non-rotatively to door **26**. This escutcheon **67** can be secured sufficiently in place by screwing on by hand without any tools.

This new concept of knob trim with a central rose encircled by variously designed escutcheons also lends itself beautifully to the new two-tone finish trend that is sweeping the field, since the rose can be in one finish and the escutcheon in another, thus making a sharp division between the two said finishes that also conceals the juncture between the two parts.

Having thus illustrated my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

I claim:

1. In key-in-knob lock means installable within and upon a door having a hole prepared therethrough for the reception of said lock means, the combination of elements comprising a key-in-knob lock unit; said unit being insertable through said hole and comprising in pre-assembled combination a frame having a longitudinal axis, knobs, concentric with and rotatable upon said axis, mounted to the ends of said frame, roses, concentric with, and mounted for longitudinal adjustment on said frame, disposed inwardly from said knobs, at least one of said roses being of a size within the limits of said hole making it insertable through said hole, and a hub section of said frame disposed between said roses; and rose support means, mountable on said unit between one of said roses and the said section, said rose support means having parts extending beyond the boundaries of said hole when it is on said unit.

2. In key-in-knob lock means installable within and upon a door having a hole prepared therethrough for the reception of said lock means, the combination of elements comprising a key-in-knob lock unit; said unit being insertable through said hole and comprising in pre-assembled combination a frame having a longitudinal axis, knobs, concentric with and rotatable upon said axis, mounted to the ends of said frame, roses, concentric with, and mounted for longitudinal adjustment on said frame, disposed inwardly from said knobs at least one of said roses being of a size within the limits of said hole making it insertable through said hole, and a hub section of said frame disposed between said roses, rose support means, mountable on said unit between one of said roses and the said section, said rose support means having parts extending beyond the boundary of said hole making it uninsertable through said hole; and escutcheon means, slipable over said knobs and onto said roses.

3. In key-in-knob lock means installable within and upon a door having a hole prepared therethrough for the reception of said lock means, the combination of elements comprising a key-in-knob lock unit; said unit being insertable through said hole and comprising in pre-assembled combination a frame having a longitudinal axis, knobs, concentric with and rotatable upon said axis, mounted to the ends of said frame, roses, concentric with, and mounted for longitudinal adjustment on said frame, disposed inwardly from said knobs, at least one of said roses being of a size within the limits of said hole making it insertable through said hole, and a hub section of said frame disposed between said roses; rose support means, having parts extending beyond the boundary of said hole making it uninsertable through said hole, mountable on said unit between one of said roses and the said section; escutcheon means, slipable over said knobs and onto said roses, and escutcheon holding means firmly securing said escutcheon against the door and on said rose support means.

4. In key-in-knob lock means installable within and upon a door having a hole prepared therethrough for the reception of said lock means, the combination of ele-

ments comprising a key-in-knob lock unit; said unit comprising in pre-assembled combination a frame, having a longitudinal axis, knobs, concentric with and rotatable upon said axis, mounted to the ends of said frame, roses, concentric with and mounted for longitudinal adjustment on said frame, disposed inwardly from said knobs, and a hub section of said frame disposed between said roses, one knob and the one rose adjacent thereto being of a size within the limits of said hole making them insertable through said hole, the other rose having parts extending beyond the boundary of said hole making it uninsertable through said hole; rose support means, having parts extending beyond the boundary of said hole making it uninsertable through said hole, mountable on said unit between the said one rose and the said section; escutcheon means, slipable over said one knob and onto said one rose and escutcheon holding means capable of firmly securing said escutcheon means against the door and on said rose support means.

5. In key-in-knob lock means installable within and upon a door having a hole prepared therethrough for the reception of said lock means, the combination of elements comprising a key-in-knob lock unit; said unit comprising in pre-assembled combination a frame having a longitudinal axis, knobs, concentric with and rotatable upon said axis, mounted to the ends of said frame, roses, concentric with and mounted for longitudinal adjustment on said frame, disposed inwardly from said knobs, and a hub section of said frame disposed between said roses, one knob and the one rose adjacent thereto being of a size within the limits of said hole making them insertable through said hole, the other rose having parts extending beyond the boundary of said hole making it uninsertable through said hole; rose support means, having parts extending beyond the boundary of said hole making it uninsertable through said hole, mountable on said unit between the said one rose and the said section; escutcheon means, slipable over said other knob and onto said other rose and escutcheon holding means capable of securing said escutcheon means against the door and on said other rose.

6. In key-in-knob lock means installable within and upon a door having a hole prepared therethrough for the reception of lock means, the combination of elements comprising a key-in-knob lock unit; said unit comprising in combination a frame, one knob rotatively mounted to one end of said frame, another knob rotatively mounted to the other end of said frame, one rose near the said one knob and another rose near the said another knob adjustably mounted on said frame, said one knob and one rose being of smaller size than the hole in the door and insertable through said hole, said another rose being of larger size than the hole in the door and uninsertable through said hole, and a door-accommodating section of said unit between said roses; and a rose support means mountable on said unit between said one rose and said section retentive of said one rose against removal through said hole.

7. The method of installing within and on a door a pre-assembled key-in-knob lock which lock includes a frame having a medial door accommodating section and shank portions at both sides of said door accommodating section and roses of larger and smaller size longitudinally adjustably mounted respectively on the outer ends of said shank portions and a separable rose support, which comprises providing in the door a transverse hole of larger size than the smaller rose and adjacent knob and of smaller size than the larger rose; passing said adjacent knob and smaller rose through said hole; adjusting the larger rose to contact the face of the door when the door accommodating section is substantially centered transversely of the door; inserting the rose support between the smaller rose and the door; and adjustably moving the smaller rose toward the door in clamping the rose support and larger rose against the door.


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