Oct. 28, 1952 H. YOUNG 2,615,745

DOORKNOB CONSTRUCTION

Filed Nov. 21, 1949

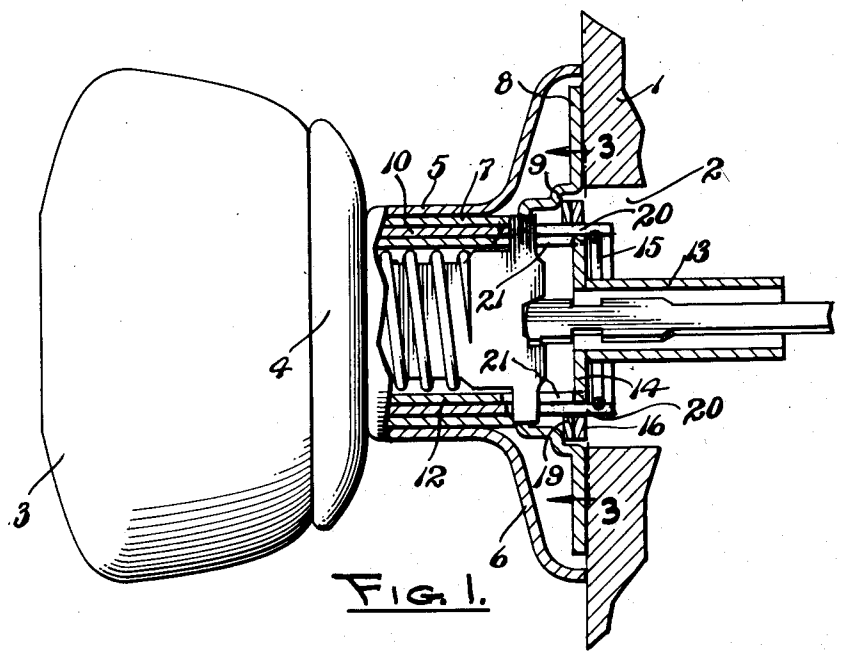


FIG. 1.

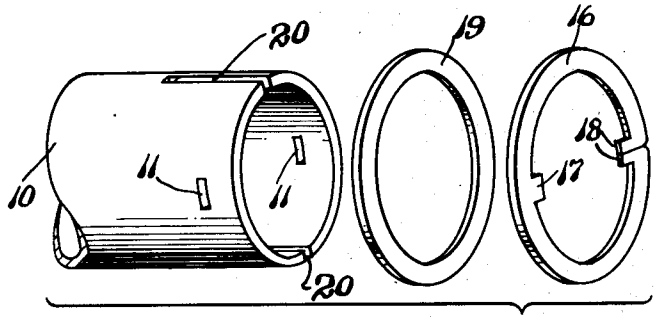


FIG. 2.

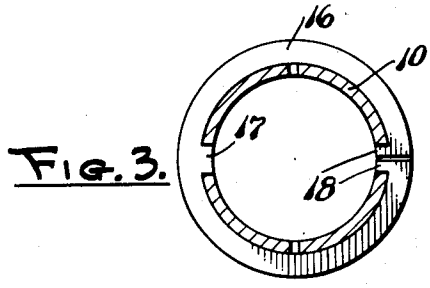


FIG. 3.

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DOORKNOB CONSTRUCTION

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1 Claim. (Cl. 292—348)

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This invention relates to novel improvements in the construction of a type of door closing and locking mechanism, known in the trade generally as "key-in-the-knob" locks for doors, upon which there has been previously filed in the Patent Office, an application by Herbert Quigley, Serial No. 47,438, having a filing date of September 2, 1948, and a second application by myself having Serial No. 115,245, having a filing date of September 12, 1949.

The mechanism as shown in the first mentioned application has been redesigned so that substantially all parts thereof are made from flat or sheet metal stampings, reducing weight of material, providing ample strength, and greatly increasing the economy of manufacture. My prior filed application referred to shows the substitution of a knob structure and knob shank and rose escutcheon assembly made of stamped metal parts and disclosing novel methods of assembly thereof.

In the production of the sheet or stamped metal parts in large quantities for use in the "key-in-the-knob" lock, tolerances as to diameter are readily held to the necessary practical limits, but as to length cannot be thus held and at the same time maintain the other tolerances, except at a prohibitive cost. If the tolerances as to length are not maintained, there is an impractical excess lost motion which, if not cured, renders the lock unsalable and, therefore, impractical.

It is an object and purpose of the present invention to provide a very simple, yet wholly effective, novel structure which takes care of and compensates for the inability to economically maintain close length tolerances in the sheet metal stamped parts used. In practice, a lost motion take-up washer is used which, in five different slightly varying thicknesses, eliminates excess lost motion. A selected thickness of washer is used in assembling any lock of the type noted, which thicknesses of the washer varies in different assembled locks, in accordance with the variances from acceptable tolerances over designed dimensions which, if they could be held to close limits without the additional cost, would make this novel improvement, so far as eliminating excess lost motion is concerned, unnecessary.

In addition to the elimination of any undesired or excess lost motion, the take-up washer further acts as a bearing between a fixed and a turning part in the mechanism, the fixed part being secured to the door and the turning part to the knob shank. Additionally, such washer

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closes an opening which exists between such fixed part attached to the door and the knob shank without which closure, chips of wood which are produced when the lock is installed on a door, or other undesired forms of material might or would be liable to get into such opening and interfere with the operative parts of the lock.

An understanding of the invention may be had from the following description, taken in connection with the accompanying drawing, in which

Fig. 1 is a side elevation, partly in the longitudinal vertical section, of the knob and associated structure, the knob being adapted to carry, housed within it, a key operated and actuated lock.

Fig. 2 is a perspective view of the inner end of the knob shank, shown fragmentarily, the washer of which varying thicknesses are used, and a retaining or holding member, maintaining the washer in operative position to bear against a fixed part of the escutcheon assembly and hold it in dirt excluding relation, and

Fig. 3 is a transverse vertical section, substantially on the plane of line 3—3 of Fig. 1, looking in the direction indicated.

Like reference characters refer to like parts in the different figures of the drawing.

The door, fragmentarily indicated at 1, in the installation of the lock has a transverse opening 2 bored therethrough, at the opposed open ends of which the knob assemblies of the lock are located, with a mechanism like or substantially equivalent to that shown in the first mentioned application for patent between such assemblies. The outer end 3 of the knob, preferably will be a sheet metal shell, substantially closed at its inner side by the member 4 also of sheet metal; and lengthwise of and within a knob a key operated lock may be located. The rose assembly includes an outer thin metal shell, having a sleeve 5 which at its inner end is flared outwardly to make a base 6, the inner edges of which bear against the outer side of the door 1. An inner member of the rose assembly includes a second sleeve 7 having the same longitudinal axis as the sleeve 5, and telescopically received therein. Said sleeve 7 is continued in a base plate 8, substantially of ring form, the inner diameter of which is approximately that of the opening 2 through the door. The integral connection between the inner end of the sleeve 7 and the base plate 8 is of the form shown in Fig. 1, with a shoulder 9 which, in the assembly, provides a

bearing against which the lost motion take-up washer of selected thickness bears.

Inside of the sleeve 7 is a knob shank 10 of a cylindrical form which extends through the knob and is connected at its outer end to the outer knob portion 3. The knob shank 10, near its inner end, which inner end extends partly into the opening 2 through the door, has two opposed slots or openings 11 diametrically opposite each other, and is also slotted at 20 from its inner end outwardly for a distance, as shown, for a purpose which has no bearing upon the present invention but is fully described in my prior application. The inner sleeve 12 within the knob shank 10 is operatively connected with the key actuated lock and it, likewise, being no part of the present invention, is not further detailed in structure or use.

A spindle receiving member 13, usually square in cross section because the spindle between knobs normally is of such cross section, is located axially in alignment with the knob shank 10, and at its outer end extends partly thereinto. It has a plate 14 at its inner end which extends across the inner end portion of the knob shank 10 and has projections entering slots 21 shown at the inner end of the sleeve 12. It is releasably held in place by a split ring 15, seated in a groove at the inner end portion of the knob shank 10.

A divided spring ring 16 of flat wire surrounds the knob shank 10. At one side it has an inwardly extending radial lug 17 which enters one of the slots at 11. Diametrically opposite where the ring is split or divided it has two radial inwardly extending lugs 18, the combined width of which is substantially equal to the width of the lug 17, both entering the opposite slot 11. The retaining ring 16 is secure upon the knob shank, but may be removed by springing the retaining ring 16 outwardly as is evident.

Before such holding or retaining ring 16 is assembled in place, a flat washer 19 of a selected thickness, such thickness being dependent upon what would otherwise be the lost motion longitudinally of the knobs with respect to their rose assemblies, is located over the knob shank so that after assembly it is between the retaining ring and the shoulder 9 previously described.

It is evident that variations in the length dimensions of parts used in this lock which are assembled together may be compensated for by selecting the proper thickness or gauge of the washer 19. When the parts are assembled, as in Fig. 1, such washer not only eliminates undesirable excess lost motion, but provides a bearing against the shoulder 9, the turning of the knob shank moving the ring 16 with it, which will ride upon and bear against the adjacent side of the washer 19. It further completely closes

the annular opening shown between the knob shank 10 and the enlarged portion at the inner end of the sleeve 7 which connects it with the base plate or ring 8. Such closure of the annular opening prevents the entrance of any foreign matter which otherwise might enter and interfere with the operation of the lock. The washer between the fixed inner member of the rose assembly and the retaining ring on the knob shank, which in practical manufacture is made in five thicknesses permits the manufacture of the lock at greatly reduced cost, as otherwise manufacturing the parts to close tolerances would increase manufacturing expense to a degree such that it would be prohibitive. The invention, though simple, therefore is of a very useful and practical character.

The invention is defined in the appended claim and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

In a structure as described, a knob shank; an escutcheon member adapted to be fixed to a side of a door through which the knob shank extends; a retaining member at the outer side and at the inner end portion of said knob shank; a filler washer surrounding the knob shank between said retaining member at the inner end portion of said knob shank and said escutcheon member and adapted to bear thereagainst, and said filler washer being one of a plurality of thicknesses selected to substantially fill the space between said retaining member and the bearing portion of said escutcheon member against which the washer is adapted to bear; said retaining member comprising a ring of flat metal parted at one side of the ring and at said parting having radially inwardly extending lugs located in edge to edge contact; said ring at its opposite side having a radially inwardly extending lug, and said knob shank having openings in opposite sides for reception of said lugs.

HERBERT YOUNG.

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