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N. MULSOW

2,478,304

AUTOMATIC KNOB LOCK

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Fig. 1.

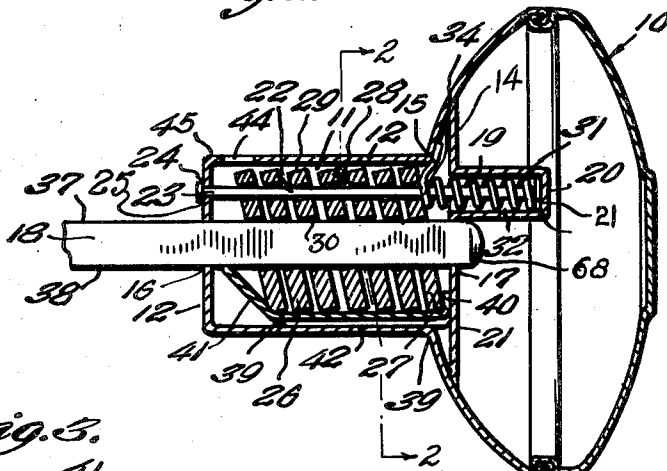


Fig. 3.

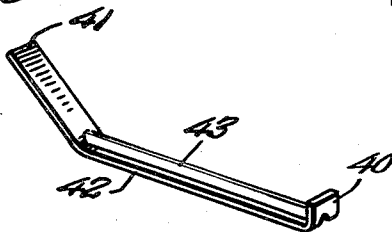


Fig. 2.

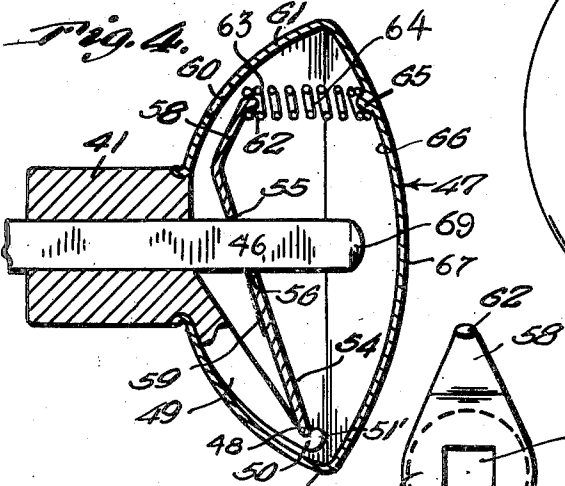
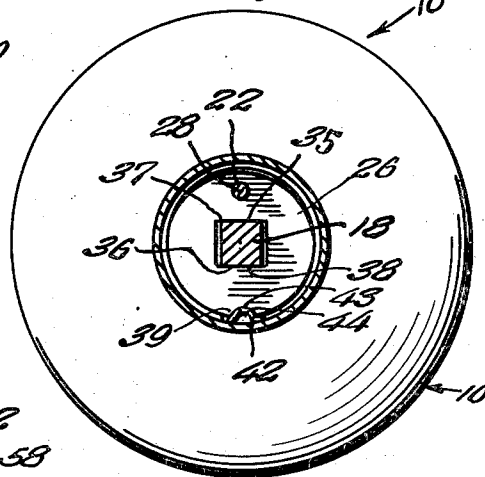
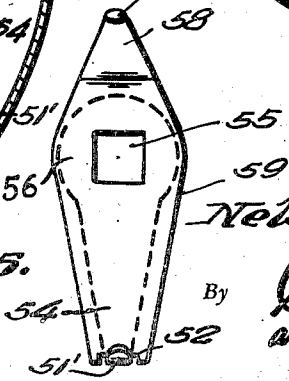


Fig. 5.



Inventor

Nelson Mulsow

By

Clarence A. O'Brien
and Harvey B. Jackson
Attorneys

UNITED STATES PATENT OFFICE

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AUTOMATIC KNOB LOCK

Nelson Mulsow, Marlin, Tex., assignor of one-fourth to Walter B. Denton and one-fourth to Joe Schmid, both of Marlin, Tex.

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4 Claims. (Cl. 292—349)

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My invention relates to locks and has for its object to provide a self securing door knob.

Another object of this invention is to provide in a shank actuated door latch, a knob self-locking upon the shank.

A further object of the invention is to provide a self-securing and self-adjusting door knob.

A still further purpose of my invention is to provide a door knob which may be secured to a shank to be operated thereby without tools and which may be instantly removed from the shank when required.

Other features and advantages will become more readily apparent from the following description and the accompanying illustrative drawings in which:

Figure 1 is a longitudinal sectional view of my improved door knob,

Figure 2 is a sectional view taken on line 2—2 of Figure 1,

Figure 3 is a detail perspective view of a control member,

Figure 4 is a view similar to Figure 1, illustrating a modification, and

Figure 5 is a detail elevational view of a tumbler.

In the above drawings as well as in the specification to follow, the same characters of reference indicate the same parts throughout.

While one embodiment of my invention is illustrated in the above referred to drawings, it is to be understood that they are merely for the purpose of illustration and that various changes in construction may be resorted to in the course of manufacture in order that the invention may be utilized to the best advantage according to circumstances which may arise, without in any way departing from the spirit and intention of my device, which is to be limited only in accordance with the appended claims. And while I have stated the primary field of utility of my invention it remains obvious that it may be employed in any other capacity wherein it may be found applicable.

My invention consists of a door knob 10, provided with a tubular shank 11, provided with an outer end wall 12, and a wall 14, adjacent its inner end 15, said end walls being provided with square openings 16 and 17, to receive a latch operating shank 18.

The wall 14, is provided with an inwardly extending housing 19, against the end 20, of which seats the head 21, of a rod 22, the end 23, thereof being supported in a bore 24, in said wall 12, and is preferably spot welded thereto as indicated at

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25. Threaded on the pin 22, is a series of tumblers 26, 27, etc. by means of bores 28, adjacent the upper ends 29, of the tumblers and all of which bores align with one another. Each tumbler disk 26, 27, etc. are provided with centrally disposed square apertures 30, which align with the openings 16 and 17, and which the said shank is adapted to extend through. These apertures 30, are slightly larger in diameter than is the shank 18, whereby the tumblers may seat inclined relative to the shank. In order to hold the tumblers in said inclined position I provide a spring 31, coiled around the inner end 32, of rod or pin 22, and mostly within the housing 19. The end of the spring 31, however, projects beyond the housing and has fixed thereto a washer 34, which is forced against the inner end tumbler 27, by the spring and causing the balance of the tumblers to bear against one another, which in turn causes the upper and lower edges 35 and 36, of the tumblers to bite against the upper and lower surfaces 37 and 38, of the shank 18, whereby no amount of pulling against the knob 10, will release it from the shank 18, as the harder the pull the harder the bite and due to the further fact that the lower notched edges 39, of the tumblers are held within their proper positions by means of the upturned ends 40 and 41, of a keeper 42, therefor. This keeper is located diametrically opposite the rod 22, and is provided with a longitudinal rib 43, over which the notched edges of the tumblers seat.

The said tumblers have sufficient play upon said keeper and also upon the rod 22, in order that when it is desired to remove the knob 10, from its shank 18, a nail or the like (not shown) may be projected through the apertures 44, in the upper wall 45, of shank 11, and the tumblers moved therewith to vertical positions, relieving the bite of the tumblers upon the shank 18, whereby the knob may readily be withdrawn therefrom.

In Figures 4 and 5 of the drawings I show a modification of the above described device and in which I provide a common shank 46, to which a hollow knob 47, is secured and from the forward lower end 48, thereof there inclines an arm 49, the end 50, of which approximately reaches the peripheral portion of the knob and is provided with an upturned terminal 51', upon which the cut-out end 52, of the lower portion 54, of a substantially diamond-shaped tumbler 59, seats. This tumbler is provided with a square opening 55, in its mid portion 56, to receive a shank 46. The upper end 58, of the tumbler is inclined

forwardly and faces the opening 60, in the rear wall 61, of the knob 47, and terminates in a right angular pin 62, which is projected through one end 63, of a coil spring 64, compressed between said pin 62 and a teat 65, formed on the inner surface 66, of the outer wall 67, of said knob 47. In this case the tumbler 59, normally bites upon the shank 46, holding the knob secured to the shank and it is released in the same manner as that related for the first form of the invention. The terminals 68 and 69, of both shanks 18 and 57, are rounded in order to be easily projected through the respective opening through which they must pass.

There are a number of distinct advantages of my knob over other forms of knobs, one is that it may be applied instantly, it may be removed from its shank almost as fast, it requires no screws or attaching means other than self-contained, it may be placed on a shank or removed therefrom by any novice and will stay when put. And one primary object of this invention is that it is self-adjusting relative to any door lock using a shank for operating a spring or other latch, eliminating screw holes in the shanks and obviating the use of spacer washers on the shanks and providing a tight fit.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Changes in shape, size and rearrangement of details and parts such as come within the purview of the invention claimed may be resorted to, in actual practice, if desired.

Having now described my invention that which I claim as new and desire to procure by Letters Patent is:

1. In combination with a door latch spindle and a door knob detachably supported thereon, a cylindrical body on said door knob having opposite closed ends provided with aligned spindle-receiving apertures, a guide pin between said body ends disposed in parallel spaced relation to said spindle, a series of apertured tumblers slidably supported on said guide pin being formed with central spindle-receiving apertures of slightly larger diameter than the diameter of said spindle, a control member engageable with the peripheral edges of said tumblers, and means for normally holding said tumblers in angular relation to said spindle for locking said door knob on said latch spindle.

2. In combination with a door latch spindle and a door knob detachably supported thereon, a cylindrical body on said door knob having opposite closed ends provided with aligned spindle-receiving apertures, a guide pin between said body ends disposed in parallel spaced relation to said spindle, a series of apertured tumblers slidably supported on said guide pin being formed with central spindle-receiving apertures of slightly larger diameter than the diameter of said spindle, said tumblers being formed with peripheral notches, a control member engageable with the peripheral notches in said tumblers, and yielding means within the knob engageable with an adjacent end tumbler for yieldingly holding said tumblers in angular gripping relation to said spindle for locking said door knob on said latch spindle.

3. The subject matter as claimed in claim 2, and said last-mentioned means comprising a coil spring encircling the end of said guide pin within the knob and engageable with an adjacent end tumbler for resiliently urging and holding said tumblers in angular gripping relation to said spindle for locking said door knob on said latch spindle.

4. The subject matter as claimed in claim 2, said last-mentioned means including a coil spring encircling the end of said guide pin within the knob and engageable with an adjacent end tumbler for resiliently urging and holding said tumblers in angular gripping relation to said spindle for locking said door knob on said latch spindle, and said body having an opening through its side adjacent its end remote from the knob through which an implement may be inserted to engage the tumblers and move them against the effort of the spring to release them from binding engagement with the spindle.

NELSON MULSOW.

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