April 10, 1956 R. L. CRANDELL 2,741,502

DOOR KNOB LATCH SET

Filed Nov. 19, 1953

FIG. 1.

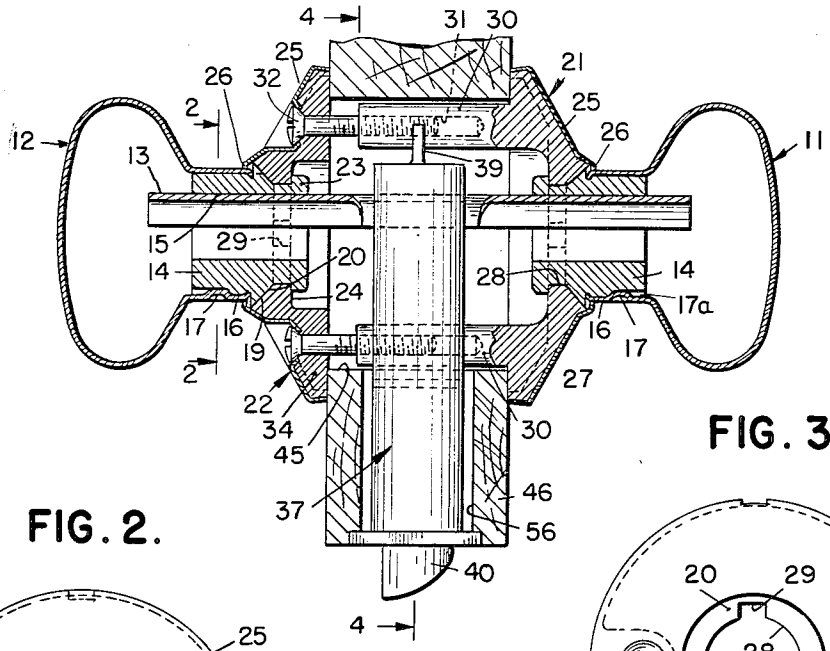


FIG. 2.

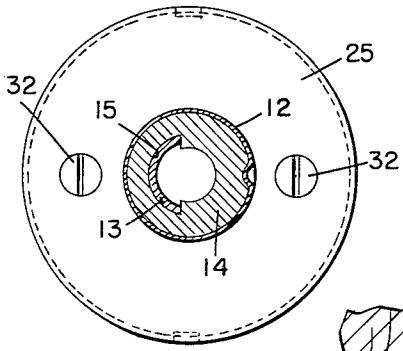


FIG. 3.

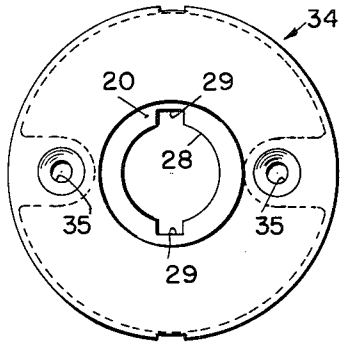


FIG. 4.

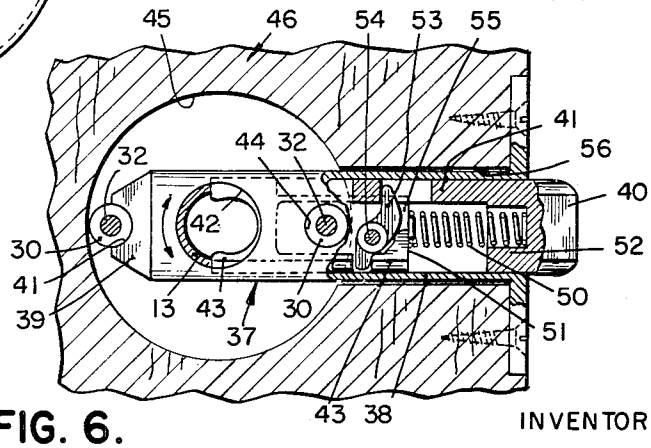


FIG. 5.

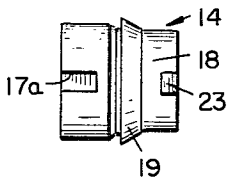
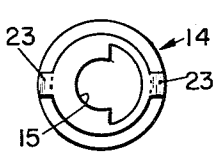


FIG. 6.



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DOOR KNOB LATCH SET

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6 Claims. (Cl. 292—169)

This invention relates to a door-knob latch set.

One object of the invention is to provide a simple, easily mounted, knob-operated passing-through latch for a door. Another object is to provide simple means for rotatably mounting a door knob having a neck, for rotation relative to an adjacent rosette. Another object is to provide a simple knob-operated latch set in which a spring latch is retracted by about a one-quarter turn of the spindle by either of the knobs. A further object is to provide an assembly of a spring latch, rosettes, operating spindle and a pair of knobs, which assembly is simple and requires a minimum of installation effort. These and other objects are attained by my invention, which will be understood from the following description, reference being made to the accompanying drawing, in which:

Fig. 1 is a plan view, partly in cross-section, showing my new door-knob latch set;

Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is an outside end elevational view of the left rosette;

Fig. 4 is a cross-sectional view taken on the line 4—4 of Fig. 1;

Fig. 5 is a side elevation of a knob neck insert;

Fig. 6 is an end view of the insert shown in Fig. 5.

Referring to the drawings, my latch set consists, generally, of a pair of knobs 11 (right)and 12 (left), which are operatively connected together by a spindle 13, which is half cylindrical in cross-section. The spindle 13 is operatively attached to each of the knobs by means of a plug insert 14, which is provided with a half circle axial opening 15, the plug insert being attached to the neck 16 of each of the knobs 11 and 12 by dimples 17 in corresponding depressions 17—*a*. The plug inserts 14 are provided with an inwardly directed extension 18, there being a tapered shoulder 19 which serves as bearing surface to a corresponding bearing recess 20 in the rosette 21 for knob 11 and correspondingly the rosette 34 for the knob 12. Extending radially from the plug insert extension 18, are ears 23 extending outwardly, preferably at opposite peripheral positions, on the said extension 18, near the inner end thereof, these ears being adapted to slidably engage the inner surface 24 of the rosette bodies 27 and 34 to prevent the removal of the plug inserts 14 and attached knobs 11 and 12 after the latch set is assembled on the door. The right rosette 21 consists of outer cover 25, having an outer axial collar 26 which is adapted to overlie the neck 16 of the knob 11, and a rosette body 27 fitting within the cover 25, said body having an axial opening 28 adapted to receive the plug insert extension 18, with the faces of the ears 23 abutting the surface adjacent the axial opening, there being provided ear slots 29 at diametrically opposite positions disposed at right angles to the latch bolt 40. At positions in line with latch bolt 40 and at opposite peripheral positions, there are provided connecting posts 30, extending inwardly through the door toward the opposite rosette 22. Threaded holes 31 are provided in the ends of each of said

posts, these being adapted to receive assembly screws 32 whose heads are accessible on the outer face of the rosette 22. The connecting screws join the two rosettes through the door and clamp the rosette peripheral edge faces aaginst the edges of the opening or hole 45, in the door 46. The left rosette 22 similarly consists of an outer cover 25 and a rosette body 34, which rosette is provided with an axial opening 28, having ear slots 29 for the ears 23 of the plug insert extension 18. The rosette 22 is provided with connecting screw holes 35, aligned with the connecting posts 30 whose threaded holes 31 are adapted to receive the assembly screws 32 to secure the parts together in the opening 45 of the door 46. The ears 23 on the cylindrical extension 18 of the plug insert 14 for the rosette 22, on the left, are also positioned, when assembled, to be at right angles to the latch bolt 40.

The spring latch bolt unit 37 consists of an outer housing 38 which is substantially cylindrical in cross-section, but flattened on the two sides 39, there being a notch 41 in the inner end of the housing 38 adapted to engage one connecting post 30, and a hole 44 at a position opposite the spindle adapted to receive the other connecting post 30. A spindle hole 42 disposed between the notch 41 and the hole 44 through which the spindle 13 passes is provided, and engages the ends of the yoke member 43 for retraction of the latch bolt 40.

When the spindle 13 is rotated in either direction, the edges of the half cylindrical spindle abut the ends of the yoke member 43, and retract the latch bolt 40. The latch bolt unit 37 consists of a flattened cylindrical latch bolt 40 which is provided with a longitudinal extension 41 at one edge thereof, upon which the yoke member 43 slides longitudinally within the housing 38. A compression coil spring 50 is disposed between the outer end 51 of the yoke member 43, and the inner end 52 of the latch bar 40, this spring projecting the latch bolt or bar 40 outwardly at all times, except when it is positively retracted by the turning of the spindle by either of the knobs. The edges of the half cylindrical spindle abut the arms of the yoke and the inward movement of the yoke member 43 actuates a retracting lever 53 pivoted by the pin 54 to the flat walls of the housing 38, the said retracting lever being disposed within a slot, or opening 55, arranged for compactness in the yoke member 43. The latch bar 40 is free to move inwardly irrespective of the position of the spindle or the yoke.

In mounting my latch set on a door, a hole is drilled through the door, this hole being in diameter slightly less than the diameter of the rosettes, so that the peripheral edge of a rosette clamps against each margin of the hole. A latch bolt hole 56, connecting at right angles with said main hole, is provided from the edge of the door. The latch bolt housing 38 is inserted in said hole from the edge of the door, and the corresponding rosette 21 is inserted against the right face of the door, with the operating spindle 13 in position in the insert 14 of the attached right-hand knob 11, and projecting through the spindle hole in the spring latch unit, the edges of the half cylindrical spindle abutting the ends of the yoke member 43 inside the latch bolt house 38. The outer end of the spindle is then inserted in the opening provided in the plug insert 14 of the left knob 12 and rosette 22, the rosette being rotated so that the assembly screw holes 35 are in position adjacent the threaded holes 31 of the posts 30. In this position, the ears 23 on the left-hand plug insert 14 are at right angles to the ear slots 29 on the rosette 22, thus preventing removal from the rosette 22 of the knob 12 with its plug insert 14, but leaving the knob and insert rotatably joined. The assembly screws 32 are then threaded into the threaded holes 31 of the connecting posts 30, to clamp the rosettes 21 and 22 to the door, the spring latch bolt unit being

laterally slidable on the posts **30** and on the half cylindrical spindle **13** to accommodate its positioning in doors of varying thickness.

The assembly is easily removed from a door by proceeding in steps in reverse sequence to those described, namely, the removal of assembly screws **32**, in turning of the left rosette until the rosette can be removed axially by the concidence of the ears and the ear slots, thus removing the left-hand knob and rosette from the spindle **13**. Following this, the right-hand knob and rosette assembly may be removed axially and the knob removed from the rosette by rotating until the ears **23** coincide with the ear slots **29** in the rosette **21**.

The rosette bodies and the latch housing are preferably made from die castings, while the knobs, rosette covers, are made by spinning thin sheets of metal.

The advantages of my simple latch set will be apparent. The small number of parts and the adjustability of the assembly for different thickness of doors gives a marked advantage in the mounting of the latch set on a door. A simple means for rotatably attaching the knobs to the rosettes, for the limited turning required to actuate the latch bolt, results from the provision of ear slots and ears disposed 180° apart. The simplicity of construction results in lower manufacturing costs and the interchangeability of parts.

I claim:

1. In a door-knob latch set having a spring latch unit adapted to be mounted in a hole extending inwardly from the door edge, and having a spindle-engaging means whereby said latch is operated by a spindle turning of less than one-half revolution; a latch operating means comprising spindle adapted to actuate said latch unit; a rosette adapted to be removably held on the face of a door by bolt means connecting with a rosette on the opposite face of the door; a door-knob having a tubular neck and a spindle-engaging plug insert non-rotatably attached in said neck, said plug having ears extending radially from the periphery of said plug; said rosette having an axial bearing for said insert, said bearing having peripheral slots for said ears extending from the front to the rear faces of said bearing; said ears on said insert being positioned to rotatably secure the knob to said rosette within the limits of turning of said spindle in the actuation of the said latch unit.

2. In a door-knob latch set having a spring latch unit adapted to be mounted in a hole extending inwardly from the door edge, and having a spindle-engaging means whereby said latch is operated by a spindle turning of less than one-half revolution; latch operating means comprising a segmental cylindrical spindle adapted to actuate said latch unit, said spindle being axially removable from said latch unit; a rosette adapted to be removably held on the face of a door by bolt means connecting with a rosette on the opposite face of the door; a door-knob having a tubular neck and a spindle-engaging plug insert non-rotatably attached in said neck, and having an extension inwardly of said neck, said extension having ears projecting radially from the periphery of said extension; said rosette having an axial bearing for said insert, and said bearing having longitudinal peripheral slots adapted to receive said ears on said insert; said ears on said insert being positioned to rotatably secure the knob to said rosette within the limits of turning of said spindle in the actuation of said latch unit.

3. In a door-knob latch set having a spring latch unit adapted to be mounted in a hole extending inwardly from the door edge, and having a spindle-engaging means whereby said latch is operated by a spindle turning of less than one-fourth revolution in either direction; latch operating means comprising a segmental cylindrical spindle adapted to actuate said latch unit, said spindle being axially removable from said latch unit; a pair of rosettes adapted to be removably pressed against the opposite faces of a door by bolt means connecting them together; a pair of door knobs having tubular hubs; a spindle-engaging plug insert non-rotatably attached in each of said hubs, each of said plugs having ears extending radially from its periphery; each of said rosettes having an axial bearing for its corresponding plug insert, said bearing having longitudinal peripheral slots for said ears extending from the front to the rear faces of said bearing; said ears on said plug inserts being positioned to rotatably secure each knob to its corresponding rosette within the limits of turning of said spindle in the actuation of said latch unit.

4. In a doorknob latch set having a spring latch unit adapted to be mounted in a hole extending inwardly from the door edge, and having a spindle-engaging means whereby said latch is operated by a spindle turning of less than one-fourth revolution in either direction; latch operating means comprising a segmental cylindrical spindle adapted to actuate said latch unit, said spindle being axially removable from said latch unit; a pair of rosettes adapted to be removably pressed against the opposite faces of a door, one of said rosettes having connecting posts extending toward said other rosette; screw means to removably connect the free ends of said posts to said other rosette; a pair of doorknobs having tubular hubs; a spindle-engaging plug insert non-rotatably attached in each of said hubs, and having ears extending radially from the periphery of said plug insert; each of said rosettes having an axial bearing for its corresponding plug insert, each bearing having longitudinal peripheral slots for said ears extending from one face of said bearing to the other face; said ears on said plug inserts being positioned to rotatably secure each knob to its corresponding rosette within the limits of turning of said spindle in the actuation of said latch unit.

5. In a doorknob latch set, means for mounting a doorknob for limited rotary movement in a rosette attachable to a face of a door comprising a doorknob having a hub and having ears extending radially from the periphery of said hub; a rosette having an axial bearing for said hub, said bearing having longitudinal peripheral slots extending from the inside face to the outside face of said bearing, said slots being positioned to receive said ears of said hub; said ears, when rotationally positioned out of alignment with said slots, being adapted to rotatably secure the knob to said rosette; and means connecting said rosette through the door to an opposing rosette whereby to prevent relative rotary movement thereof.

6. In a doorknob latch set, means for mounting a doorknob for limited rotary movement in a rosette attachable to a face of a door comprising a doorknob having a tubular neck; a spindle-engaging plug insert nonrotatably attached in said hub and having ears extending radially from the periphery of said insert; a rosette having an axial bearing for said insert, said bearing having longitudinal peripheral slots extending from the front face to the rear face of said bearing, said slots being positioned to receive said ears of said insert, said ears when rotationally positioned out of alignment with said slots being adapted to rotatably secure the knob to said rosette; and means connecting said rosette through the door to an opposing rosette whereby to prevent relative rotary movement thereof.

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