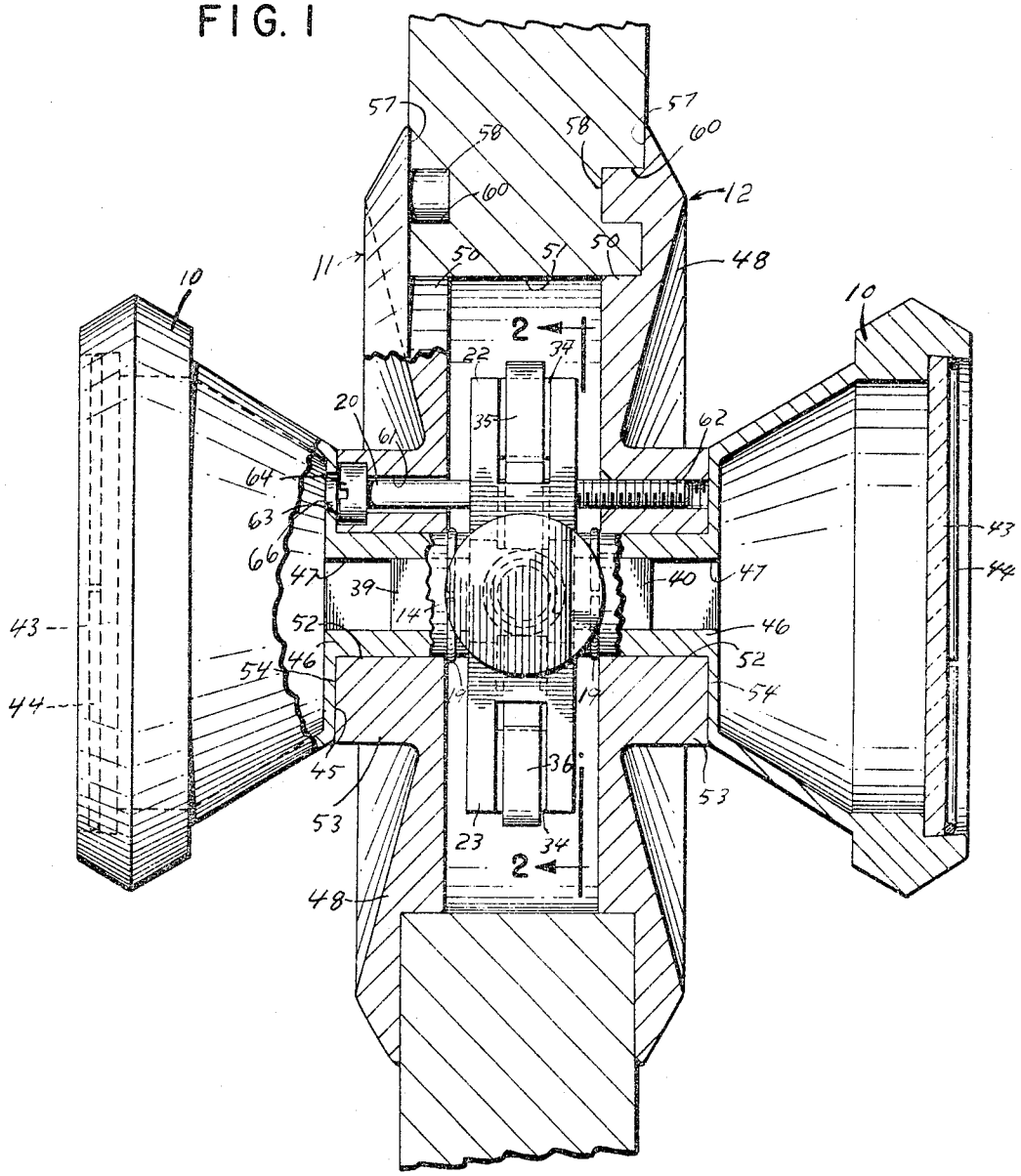
Aug. 30, 1966 R. S. LINT 3,269,762

DOOR LATCH

Original Filed Aug. 21, 1961 2 Sheets-Sheet 1

FIG. 1



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FIG. 2

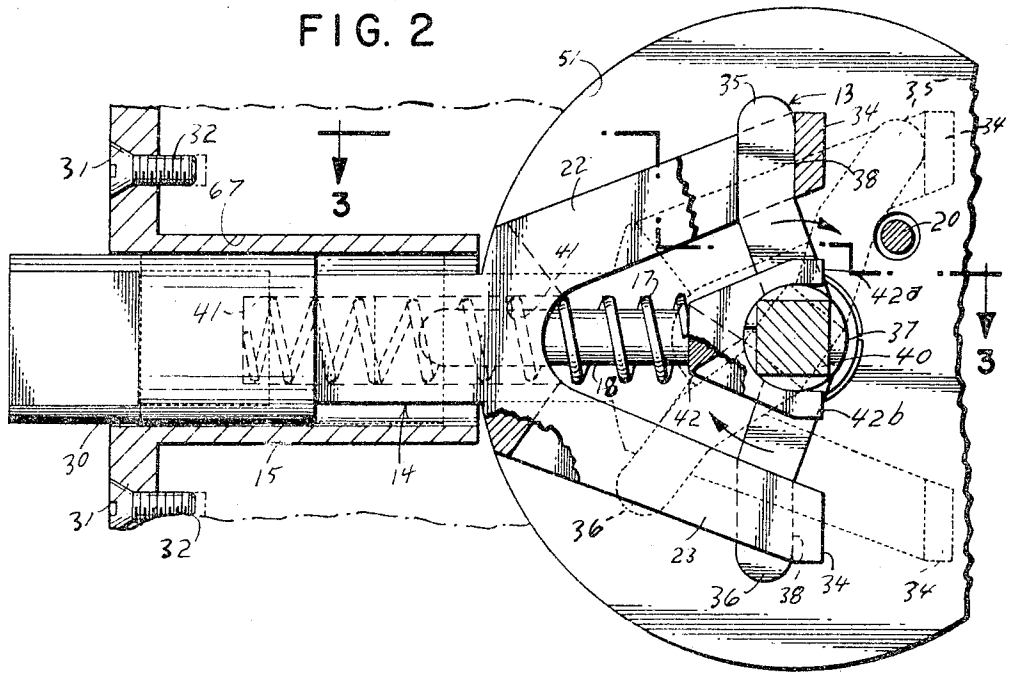
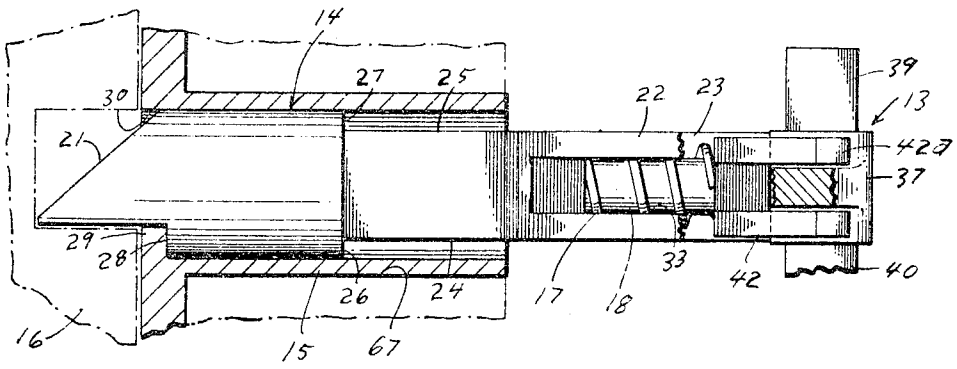


FIG. 3



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3,269,762

DOOR LATCH

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Original application Aug. 21, 1961, Ser. No. 132,825, now Patent No. 3,179,459, dated Apr. 20, 1965. Divided and this application Mar. 29, 1965, Ser. No. 443,256
2 Claims. (Cl. 292—169)

This invention relates to a door latch of the general type in which a bolt is retracted against spring pressure by action of rollbacks responsive to turning of a handle and is a division of my pending application Serial No. 132,825, filed August 21, 1961, and now Patent No. 3,179,459.

It is a general object of the invention to provide an improved such door latch, which is of particularly simple, economical and durable construction, and which has an unusually small number of parts which are peculiarly adapted to be preassembled into very few components which may then be quickly and easily assembled onto a door to form the completed latch.

Another object is to provide a door latch which requires a minimum of labor to prepare a door for the latch.

Other objects and advantages will appear and be understood in the course of the following description and claims, the invention consists in the novel construction and in the adaptation and combination of parts hereinafter described and claimed.

In the accompanying drawings:

FIG. 1 is a fragmentary side elevational view partly in section of a door latch embodying preferred teachings of my invention.

FIG. 2 is a fragmentary front elevational view partly in section of a portion of the door latch, these same parts being indicated in broken lines to show their locations in retracted position.

FIG. 3 is a fragmentary top sectional view taken on line 3—3 of FIG. 2.

Referring to the drawings it is seen that my door latch has a pair of knob handles **10**—**10** journaled in escutcheons **11**–**12** to operate a retractor **13** for a sliding bolt **14**. This bolt is projected in a latch case **15** toward a conventional strike plate **16** by a spring **17** which is compressed between the bolt and the retractor **13** and is sleeved on a guide **18**. Snap rings **19** hold the handles within their journals in the respective escutcheons while the latter are tide together by a screw **20**.

Continuing to a more detailed description of the parts, and directing attention first to the bolt **14**, it will be noted that such is beveled at its nose to provide a strike face **21** and is forked at its rear end to provide upper and lower fork arms **22**–**23**. These arms have flat parallel outer faces **24**–**25** which continue along part of the otherwise cylindrical rear end portion of the shank of the bolt and terminate at rearwardly facing shoulders **26**–**27**. From the latter the bolt shank continues forwardly as a cylinder to the strike face **21**. At its nose the bolt shank also has a cutback diametrically opposite the strike face and coplanar with the face **24** to present a forwardly facing stop shoulder **28** for bearing against the back of a face plate **29** to limit projection of the bolt by the spring **17** through a central opening **30** in the face plate. This plate is integral with the latch case **15** and has vertically spaced chamferred holes **31** for receiving anchoring screws **32**.

Returning to the fork arms **22**–**23**, it will be noted that they are longitudinally slotted at **33** in the vertical direction providing abutments **34** at their rear ends. Nesting in the slots **33** are a pair of upper and lower rollbacks **35**–**36** which radiate from the hub **37** of the retractor **13** and provide diametrically alined cam faces **38** for bearing against the abutements **34**. From the ends of the hub **37** project a pair of spindles **39**–**40** of square or other noncircular cross-section to interfit with the handles **10**.

The bolt **14** also has a longitudinal center bore **41** which is exposed between the root ends of the fork arms and terminates short of the nose of the bolt to provide a seat for the forward end of the spring **17**. At its other end the spring reacts against the guide **18**, and more particularly, against a fork-head **42** at the tail of the guide. This head has a pair of laterally spaced forks **42***a*–**42***b* fitting over the ends of the hub **37** at the sides of the base of the rollbacks **35**–**36** while the forward end portion of the guide **18** extends into the bore **41** together with the spring **17**. However, the guide terminates rearward of the forward end of the bore **41** a sufficient distance to not only permit enough relative movement between the retractor and bolt for retraction thereof, but to permit initial assembly of the parts. In this latter regard, the spring and guide are first inserted into the bore **41** and the spring compressed until the guide seats at the forward end of the bore. Then, one of the rollbacks is placed in its slot and the retractor is cocked enough from its normal operating position to permit the other rollback to be moved into its slot, whereupon the retractor is centered and the guide released to interfit the retractor hub and the fork-head. The bolt, retractor, spring and guide will then remain preassembled as a unit for later insertion into a door.

Each knob **10** is hollow and has a removable front cover plate **43** which is secured to the knob by means of a snap ring **44**. The back or inward facing portion of the knob presents a flat annular face **45**, which is necked to provide a rearwardly extending cylindrical boss **46**. This boss has a socket **47** at its outer end to mate with its related spindle **39** or **40**, so as to secure the handle rotatably with respect to the retractor **13**.

Each escutcheon **11** or **12** comprises a front plate **48** with a rearwardly extending annular disc-like protrusion **50** which is made integral with the front plate and which fits into one end of a relatively large cylindrical hole **51** bored through the width of the door. This protrusion has an axial through hole **52** which provides a journal mounting for the boss **46** of its related handle. The escutcheon also has a forwardly extending cylindrical portion **53** which presents a front annular face **54** to bear against the back face **45** of the knob. The boss **46** is so arranged that when the faces **45** and **54** are abutting, the boss **46** extends beyond the axial opening **52** of the escutcheon. This extension is circumferentially grooved to receive the snap ring **19**. Thus, each handle **10** with its escutcheon **11** or **12** may be preassembled to provide a single component for later installation in a door.

Projecting inwardly from the back face **57** of each escutcheon plate **48** and spaced radially from the annular protrusion **50** is a dowel **58**. This dowel mates with a related socket **60** bored in the face of the door to prevent turning of the escutcheon on the door.

Extending through the escutcheon **11**–**12** at the forwardly extending annular portions **53** thereof are two holes **61** and **62**, which are arranged to register when the dowels **58** are alined. Hole **62** is threaded to engage the screw **20** while the hole **61** is counterbored at **63** to accommodate the head **64** of the screw. The back wall of the handle **10** adjacent the escutcheon **11** has an access opening **66** which is equidistant with the screw hole **61** from the journal axis of the handle so that this access opening can register with the hole **61**. It should be noted that this opening is desirably smaller than the head **64** of the screw **20** so that when the handle **10** and escutcheon **11** are preassembled with the screw, the screw is imprisoned in the assembled component.

This door latch is characterized in that it peculiarly adapts itself to be partially preassembled into four sep-

arate components; the first being the afore-described bolt, retractor, spring and guide assembly; the second being the integral latch case and face plate member **15** and **20**; and the third and fourth being the two escutcheon handle members **10–11** and **10–12**, respectively.

In preparation for installation of the door latch it is necessary to bore the aforementioned hole **51** through the thickness of the door, and to bore the dowel holes **60** and the latch hole **67**, the latter being bored from the outer facing edge of the door with its axis perpendicular thereto and radial with respect to the axis of the hole **51**. The dowel holes **60** are easiest provided by boring a single hole through the door so that alinement of the dowel holes is assured.

After preparation of the door, the bolt, retractor, spring and guide component is inserted into the hole **51** with the bolt **14** projecting from the hole **67**. Since the bolt **14** must be inserted part of the way into the hole **67** at an angle to the axis of the hole before the back end of this component can be located in the larger hole **51**, there must be enough clearance between the hole **57** and the bolt **16** to allow for some misalignment therebetween. This clearance is provided by the allowance for the thickness of the latch case **15**. The latch case, face plate piece **15** and **19** can then be secured by screws **32** with the latch case **15** sleeved on the bolt **14** to provide a slide mounting therefor. Following this step the two handle escutcheon components **10–11** and **10–12**, are slipped onto their related spindles **39–40** and the dowels **58** are seated in the alined holes **60** to prevent the escutcheons from turning and to aline the holes **61–62**. A screw driver is then inserted through the access opening **66** into engagement with the screw head **64** to thread the screw **20** into hole **62** so as to draw the two escutcheon handle components together. Installation is completed by securing the two cover plates **43** onto the handles by the snap rings **44**.

The latch is disengaged by turning either handle **10** in a clockwise or counter-clockwise direction, causing respectively either the upper or lower rollback **35** or **36** to push against its related abutment **34** so as to retract the bolt **14** against the pressure of the spring **17**. The amount of retraction is limited by engagement of the fork-head **42** against the slide bolt at the base of the forks **22–23**. This occurs before the rollbacks **35–36** can engage the inner ends of the slots **33**. When the handle is released, the spring **17** acts to project the bolt **14** through the face plate opening **30** until the forwardly facing stop shoulder **28** engages the back of the face plate **29**. As is conventional, coaction of the strike face **21** of the bolt and the strike plate **16** during closing of the door causes automatic retraction of the bolt following by engagement upon closure.

Though a variety of materials could be used in the construction of this latch, it peculiarly adapts itself to having all the parts (except the spring **17**) cast of translucent plastic such as nylon. It can be seen first that the arrangement of the latch does not stress any of the parts to any great degree, thus allowing the use of such low-stress material. Further, there is the consideration that often a person who is grasping a handle has previously generated a certain amount of static electricity on his body by walking on a rug. The use of a plastic material prevents the sparking or shock otherwise experienced when the person grasps a metallic handle. For marine use, the corrosive-resistant nature of plastic is especially advantageous, as is the light weight of such material for use in aircraft. With regard to its use in a public conveyance, when used as a latch on a lavatory door, it is possible for a passenger to ascertain whether the lavatory is occupied, by observing the presence or absence of light shining through the latch. It should also be pointed out that the manner in which this latch is spring loaded acts to eliminate rattle and wear in the lock.

It is my intention that no limitations be implied and that the hereto annexed claims be given the broadest interpretation to which the employed language fairly admits.

What I claim is:

1. A door latch comprising, a slide bolt having a shank with a striking face at one end and a fork at the other end, the arms of said fork diverging and having inwardly facing coplanar slots passing through the arms and terminating by abutments at the free ends of the arms, and said shank having a longitudinal bore exposed between said fork arms, a retractor having a hub with a pair of central coplanar rollbacks projecting oppositely therefrom into said slots, an elongated guide slidably received by one of its ends in said bore and having an enlarged head at its other end presenting a pair of spaced forks interfitting with said hub at opposite sides of said rollbacks, and a compression spring sleeved on said guide and seated against said slide bolt at the foot of said bore and against the head of the guide for yieldingly urging said abutments against said rollbacks, the interfit between said hub and said head of the guide being such as to permit turning of said retractor relative to said head whereby one of said rollbacks wipes against its respective abutment while the other rollback swings away from the other of said abutments.

2. A door latch according to claim **1** in which a spindle detachably interfits with said hub to turn in unison therewith and projects in opposite directions therefrom to receive handles, a pair of parallel spaced escutcheons providing journals for said spindle, said escutcheon presenting a pair of opposed circular protrusions concentric of said spindle for fitting into the ends of a mating round hole through the door to transfer the reaction of said spring against said guide head to the door via said hub, spindle, and escutcheons, the diameter of said protrusions being greater than the distance between the outer ends of said rollbacks.

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