Nov. 22, 1960 C. C. HILLGREN 2,961,264

FINNED LATCH BOLT ASSEMBLY

Filed July 27, 1959

FIG. 1.

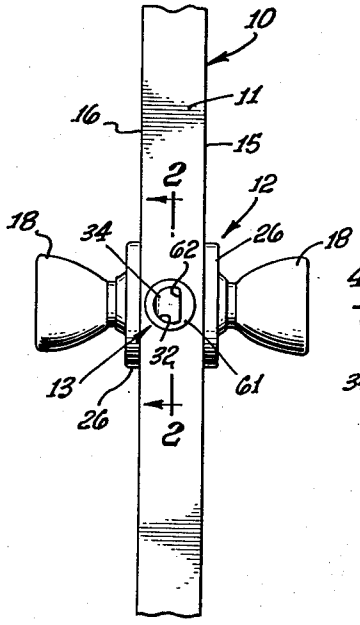


FIG. 2.

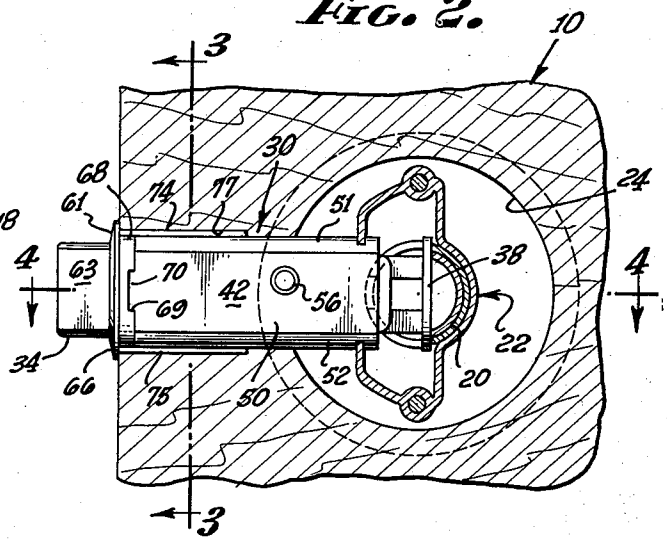


FIG. 3.

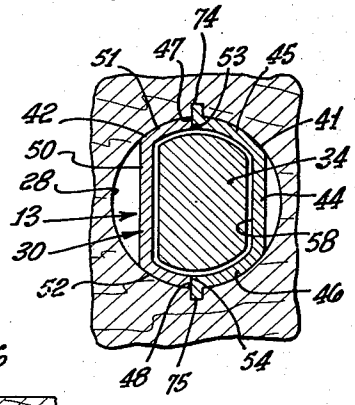
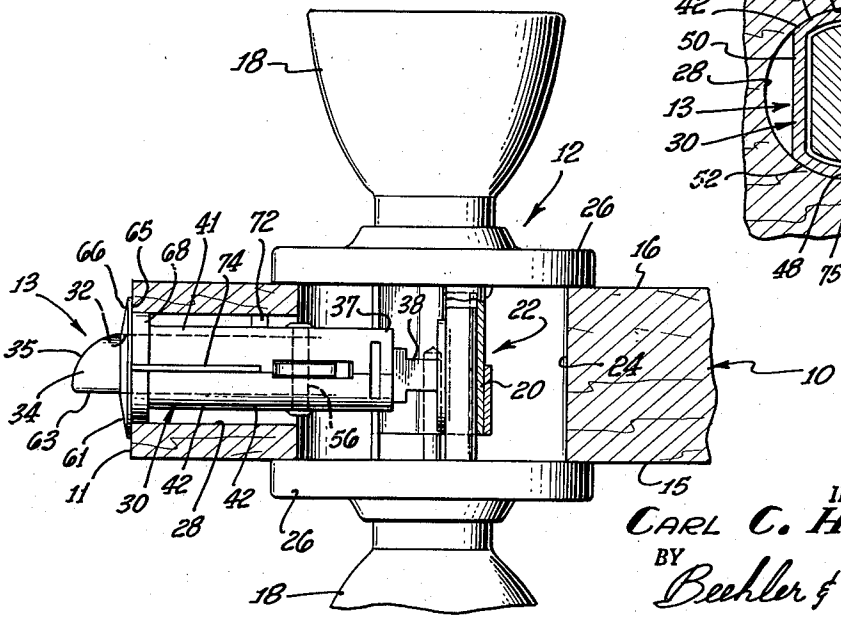


FIG. 4.



INVENTOR.
CARL C. HILLGREN
BY
Beehler & Shanahan
ATTORNEYS.

United States Patent Office 2,961,264
Patented Nov. 22, 1960

2,961,264

FINNED LATCH BOLT ASSEMBLY

Carl C. Hillgren, Newport Beach, Calif., assignor to Hillgren Manufacturing Company, Huntington Park, Calif., a corporation of California

Filed July 27, 1959, Ser. No. 829,789

1 Claim. (Cl. 292—164)

This invention relates to door latches and more particularly to an improved latch bolt assembly for a door latch to be received in a bore formed in the free edge of a door.

It is an object of this invention to provide a door latch assembly having means for preventing loosening of the assembly in the door which ordinarily occurs in conventional door latch mechanisms after an indefinite number of door closings.

Another object of this invention is to provide a door latch assembly which is adapted to be installed easily and simply, i.e. merely by driving or pressing the same into a bore formed in the door whereby the assembly may be connected to a conventional retractor mechanism actuated by turning of a door knob to withdraw the latch bolt from its projected position in a strike plate of the door frame.

Still another object of this invention is to provide a latch bolt assembly of the above mentioned character having a trim plate which does not require mortising of the door as for conventional latch mechanisms having a face plate secured in a mortise in the door as with screws.

Further objects and advantages will appear during the course of the following part of this specification wherein the details of construction and mode of operation of a preferred embodiment of the invention are described with reference to the accompanying drawing, in which:

Fig. 1 is a side elevation of a door taken in a direction toward the free edge surface of the door, the door having a latch bolt assembly of this invention installed therein;

Fig. 2 is a section on an enlarged scale taken along line 2—2 in Fig. 1;

Fig. 3 is a cross section taken along line 3—3 in Fig. 2; and

Fig. 4 is a section taken along line 4—4 of Fig. 2, various parts being shown in plan.

Referring to the drawing in detail, there is shown that portion of a door **10**, contiguous the free edge surface **11** thereof, in which a door latch is installed, the door latch being designated generally by reference numeral **12** and comprising a latch bolt assembly **13** of this invention. One side surface of the door is designated by reference numeral **15** and the other side surface by numeral **16**. The door is adapted to swing on its hinges (not shown) in and out of a door frame having a conventional strike plate mounted therein into which the bolt of the door latch is projected for holding the door in its closed position against a stop surface of the door frame.

Except for the latch bolt assembly **13**, the door latch **12** has conventional parts, i.e. two door knobs **18** on the ends of spindles **20** of a retractor mechanism **22**, the retractor mechanism being mounted in a cross bore **24** formed in the door and secured therein by rosettes **26**, whereby turning of either of the door knobs rotates a spindle for reciprocating the bolt of the latch bolt assembly.

The latch bolt assembly is received in a horizontally extending bore **28** formed to extend from the free edge surface **11** of the door to the cross bore **24**. The latch bolt assembly comprises a cylindrical housing **30** having an opening **32** formed in the outer end thereof. A latch bolt **34** is reciprocable axially in the housing and it has a strike surface **35** which is inclined to the direction of reciprocation. When the door is being closed, the inclined surface **35** will engage a strike plate of the door frame to move the bolt inwardly of the housing until the bolt may enter the hole of the strike plate to hold the door closed.

Extending through an end opening formed in the inner end **37** of the housing is a latch bar **38** which serves to operatively connect the bolt to the retracting mechanism **22** for reciprocating the bolt in the housing. The housing contains conventional springs and lever parts for urging the bolt to its outwardly extended position.

Housing **30** is formed of two elongate parts or halves, one of which is herein referred to as a base half and is designated by numeral **41**, and the other being called a cap half and being designated by numeral **42**. As best appears in Fig. 3, the base half **41** has a longitudinally extending flat wall portion **44** and two arcuate wall portions **45** and **46**, the longitudinally extending side edges of the arcuate wall portions being designated by numerals **47** and **48**, respectively. The cap half **42** likewise has a flat wall portion **50** and two arcuate side wall portions **51** and **52**, the longitudinally extending side edges of which are designated by numerals **53** and **54**, respectively. The housing halves are joined together by means of a fastener or rivet **56**, with the side edges of the housing halves being in abument whereby the housing defines an inside chamber **58** which receives the bolt and contains the usual spring mechanism for reciprocating the bolt upon actuation of the latch bar **38**. Inside chamber **58** is generally oval in cross section having opposed flat side walls which are defined by the flat portions **44** and **50**. The bolt has a cross-sectional configuration corresponding to that of the housing chamber whereby the bolt will slide inwardly and outwardly of the chamber and will not rotate on its longitudinal axis.

Secured to the outer end of the housing base half **41** and preferably made integral therewith is a trim plate **61** which defines the outer end opening **32** of the housing. An edge portion **62** of the trim plate is straight to mate with the flat side wall **63** of the bolt. The trim plate is large enough in diameter to cover the outer end opening of the horizontal bore **28** and to have the inside edge **65** of the trim plate seated flush upon the surface **11** of the door around the opening of the bore.

The outside surface of the trim plate is beveled as at **66** toward its periphery such that the peripheral edge lies almost flush with the plane of the free edge surface **11** of the door. The trim plate extends inwardly as an annular flange portion **68** of an outside diameter substantially equal to that of the bore **28** so as to fit tightly within the bore. The flange portion has a notch **69** formed therein for receiving a projection **70** on the end of the cap half **42** thus to provide an interconnection between the housing halves for holding them fixed to each other. There is an arcuate projection **72** extending outwardly from the flat wall portion **44** of the base half, the outside surface of the projection being arcuate to conform to the inside wall which defines the horizontal bore **28** thus serving to stabilize the latch bolt assembly in the bore.

The base half **41** of the latch bolt housing has two oppositely directed fins **74** and **75** integral therewith and extending longitudinally and radially outwardly from the outside surface of the base half and longitudinally from the inside of the trim plate. These fins are integral along

the side edges 47 and 48 of the base half and extend preferably about one-half the length of the housing.

To install the latch bolt assembly in the horizontal bore 28, the inner end portion of the assembly is inserted into the bore and then the assembly is driven or pressed home into the bore until the inside surface of the trim plate seats flush upon the free edge surface 11 of the door. When so driven home, the latch bar will be in position to be engaged by the retracting mechanism. Also, the pressing of the latch bolt assembly into the bore 28 will cause the fins 74 and 75 to cut their own grooves 77 in the side walls which define the bore 28.

It will be found that the fins maintain the latch bolt assembly secure in the door. The assembly will withstand a greatly increased number of door closings and strong slammings without becoming loose. Also, inasmuch as the trim plate is integral with the housing of the latch bolt assembly, it, too, is prevented from becoming loose. Furthermore, by this invention, installation of the latch bolt assembly is made much easier and less time consuming than for conventional door latches in which the trim plate requires mortising of the door and securement as with screws.

While I have herein shown and described my invention in what I have conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of my invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claim so as to embrace any and all equivalent devices.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

In the combination of a door and door latch mechanism, the door latch having opposite side surfaces and a free edge surface and a cross-bore extending therethrough and a second bore formed in the door and being open in said edge surface and extending to said cross-bore, said mechanism comprising a latch bolt assembly in said second bore, a reciprocator in said cross-bore and two door knobs connected to the reciprocator for actuating the reciprocator, said assembly comprising a hollow cylindrical housing having an outer end with an outer end opening formed therein and an inner end with an inner end opening formed therein and having an elongate latch bolt reciprocable axially in said housing and through said outer end opening to project outwardly beyond said free edge surface, the outer end portion of said housing being a trim plate which defines said outer end opening and is of greater diameter than said second bore whereby said plate has an inside peripheral edge surface seated flush upon said free edge surface around said second bore, and means operatively connecting said latch bolt to said reciprocator for moving said bolt axially in said housing upon actuation of the reciprocator; the improvement in said housing of the housing being split longitudinally thereof into a base half and a cap half, said base half comprising said trim plate and a semi-cylindrical wall portion extending longitudinally from said plate to said inner end of the housing, said trim plate having a circular flange portion extending inwardly from said inside surface of said plate and being of a diameter to fit snugly in said second bore, said semi-cylindrical wall portion being integral with and extending axially inwardly from said circular flange portion, said base half having two diametrically opposed fins integral with said flange portion and with said semi-cylindrical wall portion and extending longitudinally of and radially outward from the outside surface of said semi-cylindrical wall portion, said cap half being a semi-cylindrical wall coextensive with said semi-cylindrical wall portion of said base half, said circular flange and said cap half having intermeshing tongue and groove means for interengagement of said flange and cap half, a fastener for securing said housing halves together, and the door having two grooves formed therein extending longitudinally of said second bore from said free edge surface and being diametrically opposed and complementary in configuration with said fins, with said fins being extended into said grooves respectively, for securing the latch bolt assembly in the door.

References Cited in the file of this patent

UNITED STATES PATENTS

138,148	Gory	Apr. 22, 1873
2,016,196	Handfield	Oct. 1, 1935
2,389,819	Schlage	Nov. 27, 1945
2,795,445	Beil	June 11, 1957