Oct. 18, 1932. H. TER MEER 1,883,099

SPRING BOLT LATCH

Filed Aug. 10, 1931

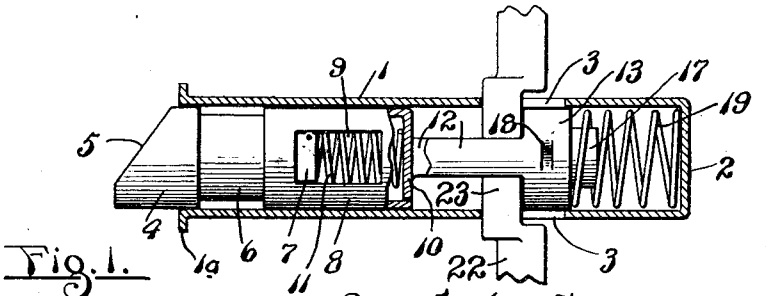


Fig. 1.

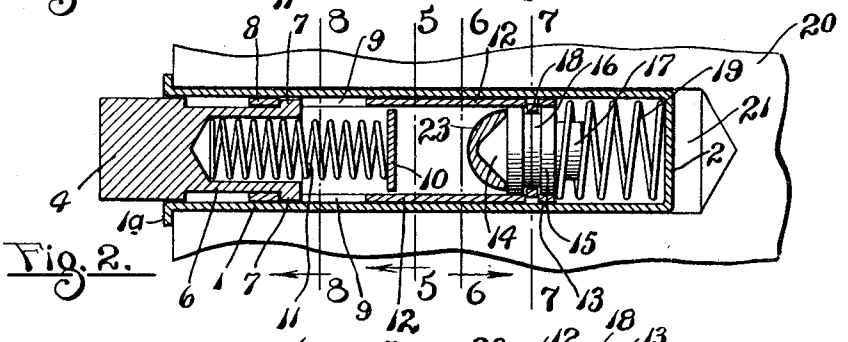


Fig. 2.

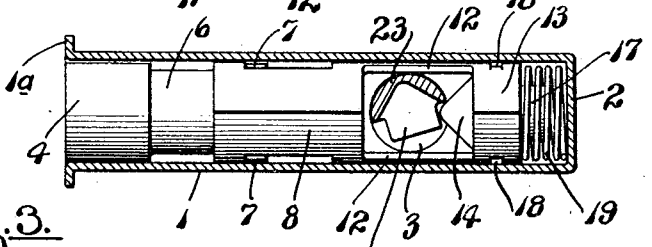


Fig. 3.

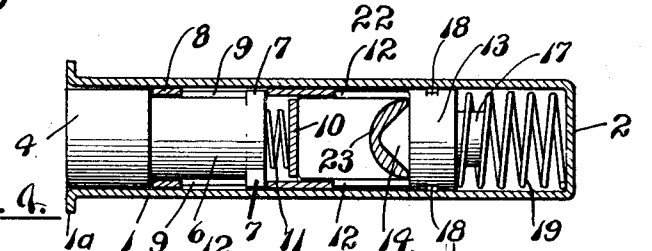


Fig. 4.

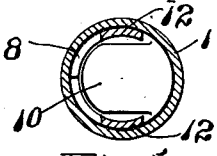


Fig. 5.

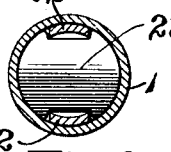


Fig. 6.

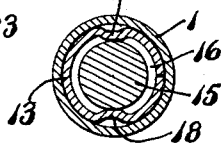


Fig. 7.

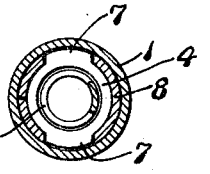


Fig. 8.

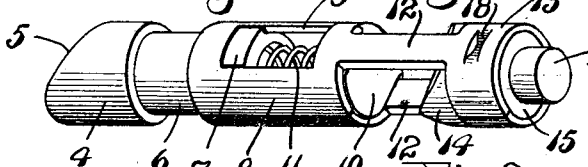


Fig. 9.

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UNITED STATES PATENT OFFICE

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SPRING BOLT LATCH

Application filed August 10, 1931. Serial No. 556,082.

This invention relates to spring bolt latches and is concerned with a novel construction and one which can be very economically manufactured for providing a spring actuated latch bolt, in which the bolt itself includes two parts normally impelled from each other so as to extend and lengthen the bolt as far as possible, whereby a projecting end of the bolt, when mounted on a door, coming into contact with a keeper plate attached to a door frame, is forced inwardly to permit the passage of the projecting end portion of the bolt to the keeper without affecting the main spring which is compressed only upon a manual operation to retract the bolt, in the operation of disengaging it from the keeper to open the door.

This permits very easy and gentle closing of doors as the impelling spring between the two parts of the latch bolt is of light strength and yields readily to permit inward forcing of the projecting end of the latch bolt when a door is closed. This construction also adds to the life of a latch in that one spring is compressed when the door is closed and the other when the door is unlatched and opened, reducing by half the number of operations to which ordinary spring latch bolts are subjected.

An understanding of the invention and of the simple and economical construction which has been produced may be had from the following description taken in connection with the accompanying drawing, in which,

Fig. 1 is a horizontal section through the latch housing, the interior mechanism being shown mainly in plan.

Fig. 2 is a longitudinal vertical section through the latch bolt construction and illustrates the same installed on a door.

Fig. 3 is a longitudinal vertical section through the latch housing, the bolt construction being shown in side elevation and showing the manner in which the bolt is retracted when a door is opened.

Fig. 4 is a like view with more of the parts of the latch bolt, however, shown in section and illustrating the actuation of the projecting end of the bolt inwardly on closing a door.

Figs. 5, 6, 7 and 8 are transverse vertical sections through the latch construction, taken, respectively, upon the planes of lines 5—5, 6—6, 7—7 and 8—8 of Fig. 2, looking in the directions indicated by the arrows, and

Fig. 9 is a perspective view of the spring bolt construction which is housed within the latch housing.

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

In constructing the latch a cylindrical housing 1, open at one end and provided with an outturned annular lip 1*a* and having a closed end 2 at the other end, is used in which the latch bolt is installed. The housing at its opposed sides has opposed circular openings 3 cut therein as shown.

The latch bolt construction consists mainly of two parts. The first is a substantially solid member 4 of cylindrical form the outer free end of which is cut at an angle to provide a beveled strike 5. From the cylindrical section 4 a second integral cylindrical section 6 of less diameter extends inwardly and at its inner free end is formed with diametrically opposed outwardly extending guide lugs 7. The inner cylindrical section 6 is bored from its inner end for a distance the purpose of which will hereafter appear.

The second part of the latch bolt is of sheet metal made from a single blank and turned into cylindrical form providing at the outer end a cylinder 8, in opposed sides of which longitudinal slots 9 are cut in which the lugs 7 previously described are received for free sliding movement. At the inner end of the cylinder 8 an integral tongue 10 of sheet metal is bent transversely across to close the inner end of the cylinder 8 and provide an abutment against which one end of a coiled spring 11 of light strength engages, the opposite end portion of the spring being received within the longitudinal opening bored in the part 6.

Integral with and extending from the inner end of the cylinder 8 are two bars 12 the inner ends of which join with a second shorter cylinder 13 which is integral therewith.

A head 14, provided with upper and lower sides located substantially at right angles to

each other and each substantially at an angle of 45° to the horizontal, is positioned directly in front of the front end of the rear cylinder or collar 13 between the bars 12. This head is formed at the outer end of a collar 15 which has an annular groove 16 around it within the cylindrical member 13 and from which a short cylindrical stem 17 extends. The head 14, collar 15 and stem 17 are integral with each other and are held in position by indentations 18 stamped inwardly from the part 13 into the groove 16.

The bolt construction, which is best shown in perspective in Fig. 9, may be freely inserted in the open end of the housing 1 after a coiled spring 19 has been first placed within the housing, it being evident that one end of the spring 19 bears against the closed end 2 of the housing and the other against the inner end of the latch bolt.

This latch bolt construction is adapted to be installed on a door 20 in a cylindrical opening 21 bored horizontally in the door from its free edge, the latch housing being stopped when the annular lip 1a at its open end engages against the door. The door is also provided with a transverse opening bored therein in alinement with openings 3 in the side of the housing 1. Then, by pressing the latch bolt inwardly as far as it can go, the head 14 will be brought back of the openings 3 far enough that an operating member for manually retracting the latch bolt may be inserted transversely through the door and the latch housing.

The operating member comprises a bar 22, preferably square in cross section, with an intermediate portion 23 thereof of trough-like shape, into the concaved side of which the head 14 is adapted to seat as shown in Figs. 2 and 4. On turning the operating rod 22 in either direction the bolt is retracted so as to withdraw the projecting end thereof into the housing. This is done when a door is to be opened and with such operation, shown in Fig. 3, the spring 19 is compressed.

The ends of the operating rod 22 may be equipped with the usual door knobs or any suitable handles for manually turning the operating member.

When a latch of the construction described is mounted and installed on a door, in closing the door the operating member and the inner portion of the bolt and the spring 19 are not affected in any way. The projecting member 4 only is moved inwardly, as in Fig. 4, spring 11 being compressed and, it being of less strength than the spring 19, there is no compression of said spring 19. On closing the door the end of the part 4 passes by the usual keeper or strike plate on a door frame and reaches the opening into which the part 4 enters. And it is obvious that the door may be closed gently and without the exertion of any great degree of force due to the slight strength of the spring 11 which only has to be overcome.

The construction is of a very practical and economical character. The latch housing and the inner member of the bolt are very readily formed from sheet metal and the other parts are easily and simply fabricated. The assembly of the latch construction and its installation on a door are likewise very readily performed, substantially the only tools required being those to bore the opening 21 in the door and the transverse opening through the door in alinement with the openings 3 in the latch housing. The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. In a latch construction, a cylindrical housing open at one end and closed at the other, a coiled spring in the housing having one end bearing against the closed end of said housing, an inner latch bolt member formed of a single blank of sheet metal having spaced apart cylindrical parts connected by integral spaced links, integral means closing the inner end of the outer cylindrical portion of said bolt member, a second latch bolt member telescopically received in the outer cylindrical part of the first bolt member, spring means of less strength than the first spring housed within said outer cylindrical portion of the first bolt member tending to force the second bolt member outwardly, and interengaging means on said second bolt member and the outer cylindrical portion of the first bolt member limiting the outward extension of the second bolt member and permitting a predetermined inward movement thereof with respect to the second bolt member.

2. A latch bolt comprising, an inner member formed from a single piece of sheet metal and including spaced apart inner and outer cylinders connected by integral spaced apart bars or links, a closure for the inner end of the outer cylindrical portion integral therewith and extending across the inner end thereof, said outer cylindrical portion of the bolt member having opposed longitudinal slots in its sides, a second bolt member telescopically received within the outer end portion of said outer cylindrical part of the first bolt member formed with guide lugs projecting into said slots, and a coiled spring housed within the outer cylindrical portion of the first bolt member and bearing at its end against a second bolt member and against the closure at the inner end of said outer cylindrical portion of the first bolt member.

In testimony whereof I affix my signature.

HERMAN TER MEER.