May 14, 1963 E. L. SCHLAGE 3,089,720

COMBINATION LATCH BOLT AND FRICTION LATCH

Filed Feb. 21, 1961

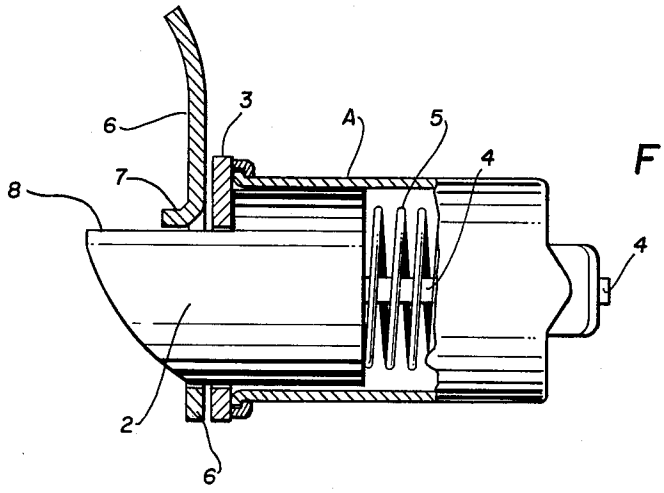

FIG. 1

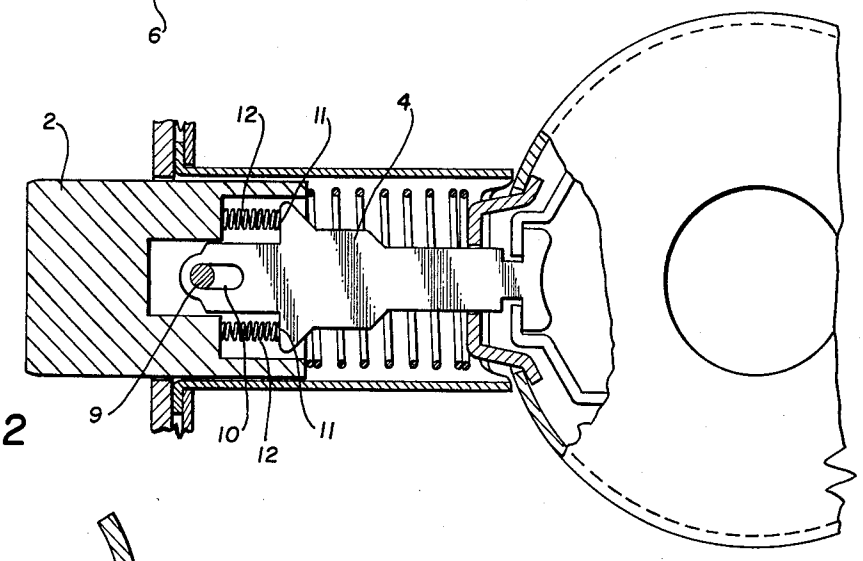

FIG. 2

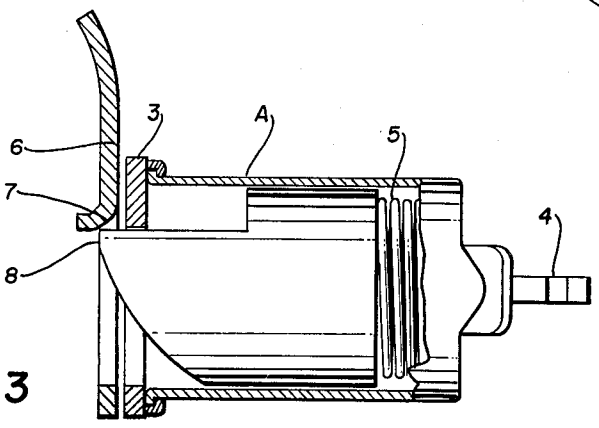

FIG. 3

INVENTOR.
ERNEST L. SCHLAGE

United States Patent Office

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COMBINATION LATCH BOLT AND FRICTION LATCH

Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, a corporation

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This invention relates to latch units such as are used with knob actuated door locks or latch sets, and especially to a latch bolt which is retracted by the lock a predetermined distance in the usual manner and then functions as a friction latch or bullet catch to complete retraction.

The object of the present invention is to provide a spring projected latch bolt which will be retracted by a lock a predetermined distance in the usual manner and will then yield under the camming influence of a strike plate in the manner of a friction latch to complete retraction as the door is opened.

The invention is shown by way of illustration in the accompanying drawings in which,

FIG. 1 is a horizontal view of the latch unit and a cooperating strike plate, said view being partially in section.

FIG. 2 is a vertical section of the latch unit and a portion of the lock with its retracting mechanism, and

FIG. 3 is a view similar to FIG. 1 showing the latch bolt retracted a major portion of its stroke.

Referring to the drawings in detail, A indicates the housing of the latch unit, **2** the latch bolt, **3** the faceplate, **4** the retractor bar, **5** the spring by which the latch bolt is normally propelled to the projected position and **6** the strike plate into which the latch bolt enters when projected.

The spacing between the faceplate of the latch unit and the strike plate which is mounted in the frame of the door opening is ordinarily not more than one-sixteenth to one-eighth of an inch when the door is properly hung or installed; but due to poor workmanship, shrinking of the door, warping of the door frame or settling of the building, the spacing may even exceed three-eighths of an inch, and as the average latch bolt has a projection of only three-enghths of an inch when fully projected, the latch bolt would be completely ineffective since it is out of engagement with the strike plate; moreover the door would swing open in response to the slightest draft. The latch bolt which is the subject of this application is provided with a projection of half an inch but it is actuated by a standard form of retracting mechanism used with latch bolts having a three-eighths projection, in other words, the retracting mechanism is only capable of retracting the half inch projection latch bolt three-eighths of an inch, hence, other means must be provided for retracting the latch bolt the remaining portion of its projection which is one-eighth of an inch. This is accomplished in the present instance by forming a cam surface **7** on the strike plate.

Operation of the latch bolt mechanism will be as follows: With the latch unit and its actuating mechanism installed in a door and the strike plate installed in the frame of the door, the door may be opened in the usual manner by grasping the knob or key and rotating it. Rotation of the knob or key actuates the retracting mechanism and as this is capable of retracting the latch bolt only three-eighths of an inch, the latch bolt will assume the position shown in FIG. 3. In this position the outer end **8** of the latch bolt is in contact with the cam face **7** of the strike plate **6**, thus by merely pulling on the knob, the latch bolt is cammed inwardly in the manner of a friction latch or bullet catch during the opening of the door.

Inasmuch as the retracting means **4** has a movement of only three-eighths of an inch and the bolt **2** has a movement of half an inch, the connection between the bolt and retractor means must be yieldable. One method of accomplishing this is clearly shown in FIG. 2 where **9** represents a pin fastened to the bolt and engageable in a slot **10** formed in the bar **4**. A pair of shoulders **11** are formed on the bar and a pair of springs **12** are interposed between the shoulders and the bolt, thus when the camming action takes place, the springs yield thereby permitting independent movement of the latch bolt with relation to the retracting means.

It is common practice to provide a lock with what is known to the trade as "the hold-back feature," i.e., a mechanism by which a three-eighths projection latch bolt may be held in fully retracted position. If the half inch projection latch bolt and its associated strike plate are substituted for the three-eighths projection latch bolt, then one-eighth of the bolt's tip will project and function as a friction latch. In other words a lock may be adjusted to function either as a friction catch or as a latch lock and friction latch combination at will.

While the latch bolt projections have been described as three-eighths and one-half of an inch, it should be understood that these are merely exemplary dimensions and that other lengths may obviously be employed.

While the latch unit described and shown in this application is of the type known to the trade as a "spring latch" it should be understood that the principles described herein apply with equal validity to "deadlocking latches."

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

1. In a door lock, said lock having a retractor, said retractor having a fixed stroke, and a latch bolt, said latch bolt having a longer stroke, a link connecting the latch bolt with the retractor, a strike plate to receive the latch bolt, said retractor when fully retracted retracting the latch bolt substantially three-quarters of its stroke with relation to the strike plate, a yielding connecion between the latch bolt and the retractor permitting movement of the latch bolt beyond that caused by the retractor, said yielding movemen permitting full retraction of the latch bolt when a push or pull is applied to the door.

2. In a door lock, said lock having a retractor, said retractor having a fixed stroke, and a latch bolt, said latch bolt having a longer stroke, a link connecting the latch bolt with the retractor, a strike plate to receive the latch bolt, said retractor when fully retracted retracting the latch bolt substantially three-quarters of its stroke with relation to the strike plate, a yielding connection between the latch bolt and the retractor permitting movement of the latch bolt beyond that caused by the retractor, a cam surface on the strike plate engageable with the latch bolt to complete retraction of the latch bolt when a push or pull is applied to the door.

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