Oct. 4, 1955 E. L. SCHLAGE 2,719,744

BACKSET LINK

Filed Aug. 21, 1951

FIG. 1

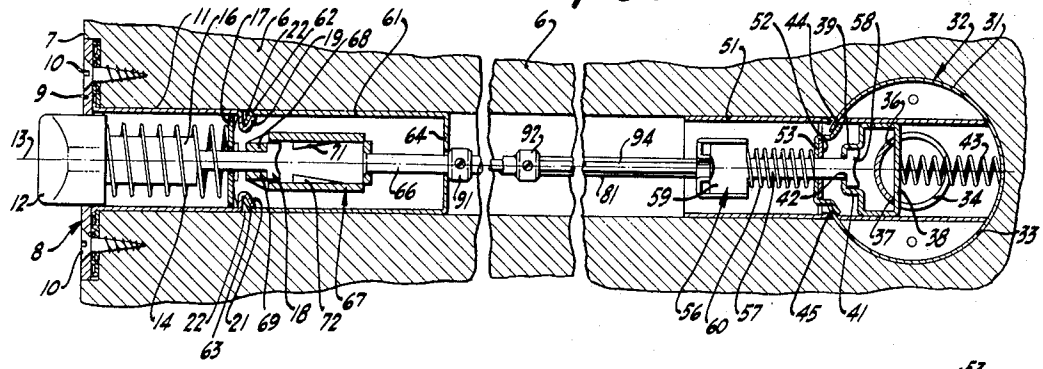


FIG. 3

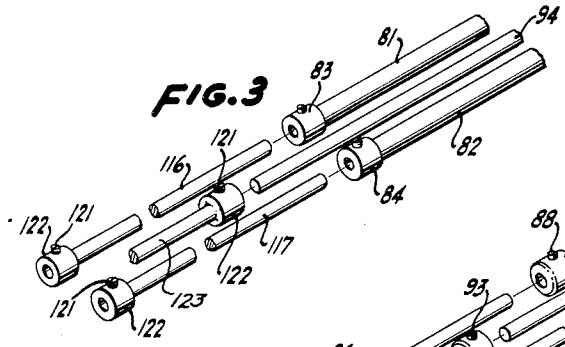
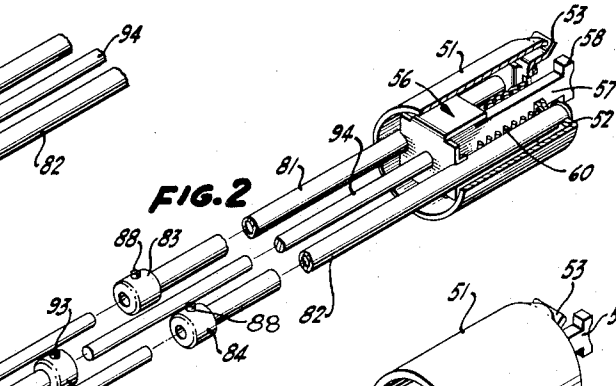


FIG. 2



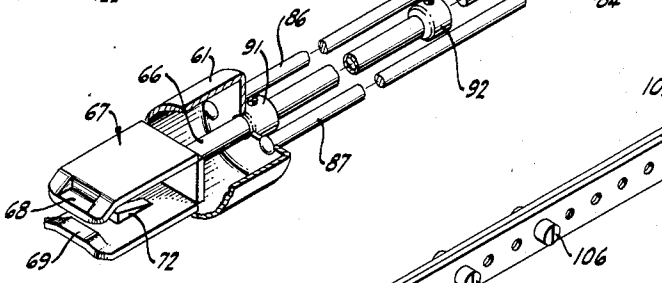
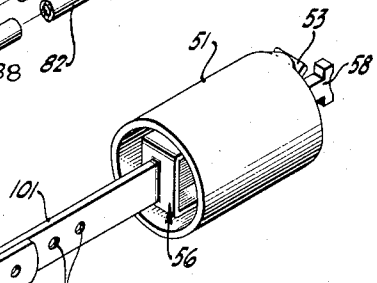


FIG. 4



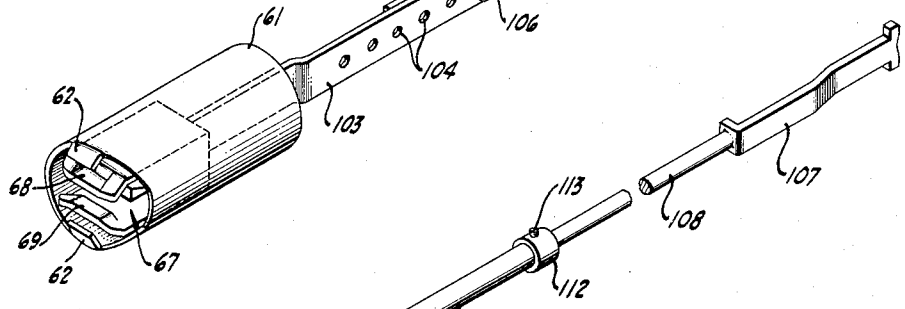


FIG. 5



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2,719,744

Patented Oct. 4, 1955

2,719,744

BACKSET LINK

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Application August 21, 1951, Serial No. 242,837

5 Claims. (Cl. 292—1)

My invention relates to lock sets and is especially concerned with structure for use in a door to establish a connection between an actuating unit such as a knob or key turned member, and a latch bolt unit such as a sliding latch bar, so that the two units can be installed in a door at any selected distance apart within very wide limits.

While it is customary in many lock sets to provide a direct interconnection between the actuating unit and the latch bolt unit, and to have a set or established or fixed distance between the rotational axis of the actuating unit and the edge of the door from which the latch bolt unit projects, it is often desired because of a need for additional space, because of door panel construction, for aesthetic reasons, for installation ease and for other purposes, to have some way of connecting the actuating unit and the latch bolt unit with variable spacing. This has heretofore been accomplished in part by the provision of one or more intervening connectors of standard length, so that the space between the actuating unit and the latch bolt unit can be established at any one of a number of set intervals. This arrangement is shown in the prior patent of Walter R. Schlage No. 2,250,036 issued July 22, 1941.

While this expedient is satisfactory in many instances, there are other cases in which it is desirable to establish the spacing at some intervening value. Furthermore, it sometimes happens that the same lock set is installed successively in different locations, in each of which different spacings are requisite. For these and other reasons I have provided a backset link which accomplishes these aims.

It is, therefore, an object of my invention to provide an improved backset link having variable dimensions.

It is another object of my invention to provide a structure for interconnecting an actuating unit and a latch bolt unit at selected spacings over a wide range and with infinite variation within the range.

Another object of my invention is to provide a backset link which can be set at different spacings at different times.

A still further object of my invention is to provide a backset link which is usable with lock sets of a customary kind.

A still further object of my invention is to provide a backset link which can readily be installed in the field by unskilled labor, and can easily be set to the desired size.

A still further object of my invention is to provide a backset unit which can be utilized interchangeably with the type of backset link above identified.

Another object of my invention is in general to improve backset links.

Other objects, together with the foregoing, are attained in the embodiments of the invention described in the accompanying description, and illustrated in the accompanying drawing in which

Figure 1 is a cross-section on a generally central vertical plane through a door panel showing a lock set in-

stalled therein with my backset link included. Certain parts of the figure are broken away to reduce its size.

Figure 2 is an isometric view of the backset link illustrated in Figure 1, certain portions of the parts being broken away to disclose the interior construction, generally in section on vertical and horizontal planes.

Figure 3 is an isometric view of additional connectors for use with the backset link of Figure 2.

Figure 4 is an isometric view of a variant from a backset link, a portion being broken away to disclose the interior construction.

Figure 5 is an isometric view, portions being broken away, of a still further modified form of backset link.

In its usual environment, the backset link is incorporated in a door panel **6** of a considerable width and having a free edge **7** into which a latch bolt unit **8** is mounted. The latch bolt unit is preferably of the kind shown in the mentioned Schlage patent and incorporates a composite face plate **9** secured by fastenings **10** to the door panel **6**, and also includes a housing **11** within which a latch bolt **12** is longitudinally movable along an axis **13**.

The latch bolt is suitably restrained against undue projection, but is urged outwardly by a coil spring **14** surrounding a shank **16** on the latch bolt and interposed between the head **12** of the latch bolt and an end plate **17** within the housing **11**. The shank **16** extends from the housing and ends in an enlarged T-shaped head **18**. The housing **11** adjacent the head **18** is indented and formed to provide a pair of diverging flanges **19** and **21**, defining a transverse pair of grooves **22**. The latch bolt unit as so far described is substantially standard.

Located in the door panel **6** at a convenient distance from the edge **7** is a cross-bore **31** within which an actuating unit **32** is mounted. The actuating unit includes a housing **33** serving as a mounting for a rotary spindle **34**, adapted to be actuated by any customary device such as a knob, or turnpiece, or lever or key. The spindle is interrupted to afford a pair of cam surfaces **36** and **37**, bearing against a follower **38** slidable within the housing **33** along the axis **13**. The follower **38** is formed to provide a pair of facing flanges **39** and **41** spaced apart to afford an intervening gap **42**. A coil spring **43** interposed between the follower **38** and the housing **33** impels the spindle normally to assume an intermediate or neutral position as shown in Figure 1. When the spindle is rotated in either direction, the follower **38** is moved toward the right in Figure 1 and the spring **43** is compressed.

In the vicinity of the gap **42** the housing **33** is interrupted both in its periphery and in its lateral walls to afford a pair of facing and spaced apart lips **44** and **45**. These lips are designed ordinarily for direct engagement, by a lateral or transverse movement, with and in the grooves **22**. When the actuating unit and the latch bolt unit are directly connected and closely spaced, the lips **44** and **45** lie within the grooves **22** and the T-shaped head **18** of the shank **16** is disposed within and behind the flanges **39** and **41**.

Under these conditions, when the follower **38** is actuated the latch bolt **12** is retracted, and when the spring **14** restores the latch bolt **12** upon release of the spindle **34**, the follower **38** is restored to its normal location.

From the above it is seen that the follower **38** is, in effect, a driving part, and the T-shaped head **18** of the shank **16** of the latch bolt **12** is a driven part.

When it is desired that the actuating unit and the latch bolt be more remotely connected, I provide a shell **51** designed to lodge within the bore of the door panel **6**, and preferably constituted by a circular cylindrical casing of metal. One end of the shell is provided with a partly perforated head **52** in which a clip **53** is held in position. The periphery of the shell **51** and the ends of the clip are shaped so that they afford hooks. There is

consequently provided an interengaging mechanism so that the housing 33 slides laterally into firm interconnection with the shell 51.

Within the shell is an operating member 56 including a shank 57 having a T-shaped head 58 thereon. This is adapted to be interengaged with the flanges 39 and 41 of the follower 38. A coil spring 60 is interposed between the clip 53 and an enlargement 59 on the shank, and urges the operating member toward the left in Figure 1. In a comparable fashion, there is located within the bore adjacent the latch bolt unit a casing 61 of circular cylindrical configuration having inturned lips 62 and 63, adapted to be engaged in the grooves 22 by relative lateral sliding. The casing on its opposite ends is formed with a head 64, serving in part as a mounting for a spindle tube 66 extending to join an operating element 67. This is formed to provide a pair of transversely disposed abutments 68 and 69, adapted to be interengaged by a transverse motion with and behind the T-shaped head 18. A pair of inwardly projecting lugs 71 and 72 define a limited length of space within which the T-shaped head 18 may travel with respect to the element 67. Except for this freedom, the connection between the operating element and the shank 16 transmits motion in opposite directions.

Pursuant to the invention, an extensible connector is disposed between the operating element 67 and the operating member 56. In one preferred form, and especially as shown in Figures 1 and 2, the connector includes a number of parts. Anchored firmly on the head 52 are parallel tubes 81 and 82 disposed within the confines of the bore, and are enlarged at their free ends to afford collars 83 and 84. Somewhat similarly anchored in the head 64 is a pair of parallel rods 86 and 87, capable of being telescopically received within the tubes 81 and 82.

When the parts are assembled in a telescoping relationship, the spacing of the operating element and the actuating member is set at the distance desired. The fastener includes set screws 88 in the collars 83 and 84 which can be tightened firmly to engage the rods 86 and 87. The spacing of the elements 51 and 61 is established thus at a selected dimension.

From an extreme position adjustably set by a stop collar 91, motion is transmitted by an extension of the tube 66, terminating in a collar 92 having a fastening set screw 93. A rod 94 is extended from the member 56 and is telescopically disposed within the tube 65. When the two elements are so assembled and the rod 94 is appropriately anchored by the set screw 93 any motion of the spindle 34 is properly transmitted to the latch bolt 12 and the return motion of the latch bolt 12 is appropriately transmitted back to the spindle 34. By merely loosening the set screws 88 and 93 the spacing between the actuating unit and the latch bolt unit can be set at any desired dimension. The spacing can be changed at any time that the lock set is out of the door. The alignment of the structure is satisfactory when it is extended to operate over a very large distance, or when it is shortened to make the coupling distance a minimum.

As shown especially in Figure 4, a quite similar arrangement is provided except that there are no parts corresponding to the tubes 81 and 82, nor to the rods 86 and 87. Rather, the interconnection between the regular units of the lock set and the connector end parts is relied upon to hold the lockset link in appropriate location. To afford a motion transmitting device, the operating member 56 is provided with a strap 101 having a number of spaced perforations 102 therein. Similarly, the operating element 67 is provided with an offset strap 103 having a similar series of equally spaced perforations 104 therein. Fasteners 106 are disposed in any of the registering openings 102 and 104. While this overlap strap arrangement does not give the infinite variation possible with the Figure 1 and 2 device, it does give close spacing intervals so that the desired extension is very closely approximated.

As a further modification, it is possible with the Figure 1 and 2 device to omit the shell 51 and the casing 61 and to omit also the tubes 81 and 82 and the rods 86 and 87. This, as illustrated in Figure 5 is accomplished by engaging a shank 107 like the shank 57 with a rod 108 inserted into and telescoped with a tube 109, extended from the operating element 67. A collar 112 provided with a set screw 113 locks the parts in selected extended position.

Sometimes the extensibility provided by the tubes and rods as shown in Figure 2 is not sufficient; for example, in institutional doors the actuating unit may be several feet from the latch bolt unit. In that case the Figure 2 device is completely separated by withdrawing the rods 86 and 87 from the tubes 81 and 82, and by withdrawing the rod 94 from the tube 66. Individual rods 116 and 117 are introduced into the tubes 81 and 82, and are engaged with rods 86 and 87 by the operation of appropriate set screws 121 in collars 122. Also the rod 94 is supplemented by a rod 123, provided with an appropriate collar 122 and set screw 121 and designed to be engaged by the collar 92 and the set screw 93.

What is claimed is:

1. A backset link for use with a lock set having an actuating unit with a driving part and having a latch bolt unit with a driven part comprising: a shell adapted to engage said actuating unit, an operating member in said shell and engaging said driving part, a casing adapted to engage said latch bolt unit, an operating element in said casing and engaging said driven part, an extensible connector coupling said operating member and said operating element, said connector including two overlapping members translatable relative to each other and so movable into various extended positions, and a fastener for holding said member in any selected one of said extended positions.

2. A backset link for use with a lock set comprising: a shell, an operating member in said shell, a casing, an operating element in said casing, a pair of extensible connectors fixed to said shell and to said casing and movable into various extended positions, means for holding said pair of connectors in any selected one of said extended positions, a third extensible connector disposed between said pair of extensible connectors and coupling said operating member and said operating element and movable into various extended positions, and means for holding said third connector in any selected one of said extended positions.

3. A backset link for use with a lock set having an actuating unit with a driving part and having a latch bolt unit with a driven part comprising: a shell adapted to engage said actuating unit, a pair of guide members fastened in and extending from said shell, an operating member slidable on said guide members and engaging said driving part, a casing adapted to engage said latch bolt unit, a pair of members fastened in and extending from said casing and telescoping with said guide members, means for holding said pair of members and said guide members in any selected telescoped relationship, an operating element in said casing and engaging said driven part, a telescoping connector coupling said operating member and said operating element, and means for holding said telescoping connector in a telescoped relationship corresponding to the selected relationship of said pair of members and said guide members.

4. A backset link for use with a lock set having an actuating unit with a driving part and having a latch bolt unit with a driven part comprising: a first link engaging said driving part, a second link engaging said driven part and mounted for translatory movement relative to said first link to permit shifting said first and second links relatively for selectively adjusting the effective

length of said backset link and means for holding said links in a selected overlapped relationship.

5. A backset link for use with a lock set having an actuating unit and having a separate latch bolt unit, said units having interfitting parts for separably coupling said units together and said actuating unit having a driving part and said latch bolt unit having a driven part, said link comprising: a shell, means on said shell engageable with said interfitting parts on said actuating unit, a first link mounted in said shell for translation relative thereto, means on said first link for engaging said driving part, a casing, means on said casing engageable with said interfitting parts on said latch bolt unit, a second link mounted in said casing for translation relative thereto, means on said second link for engaging said driven part, and a fastener engaging said first link and said second link for holding said links in any selected overlapped relationship.

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