Oct. 2, 1956 R. L. CRANDELL 2,765,187

EXTENSION UNIT FOR DOOR LOCK LATCHES

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FIG. 1.

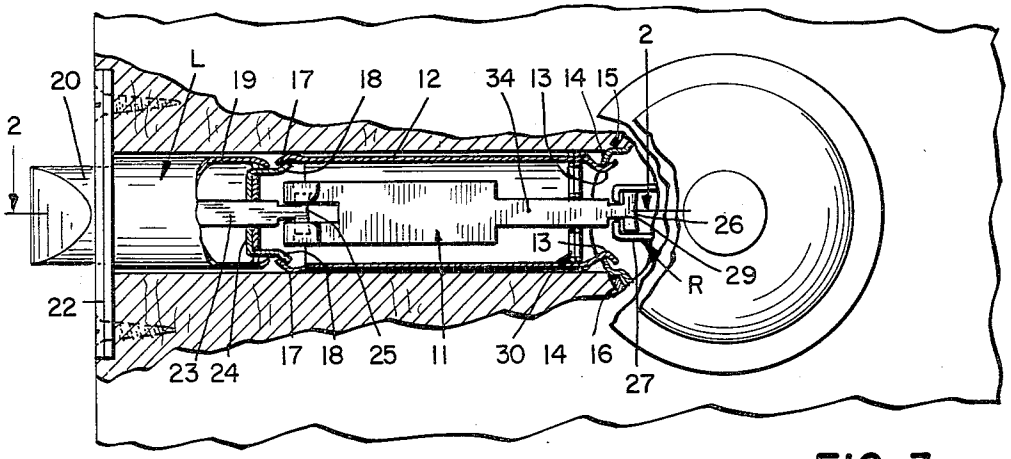


FIG. 2.

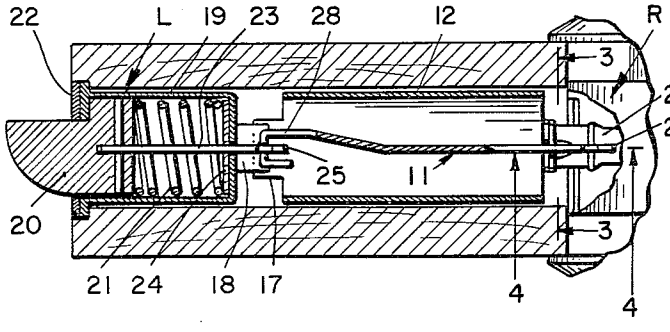


FIG. 3.

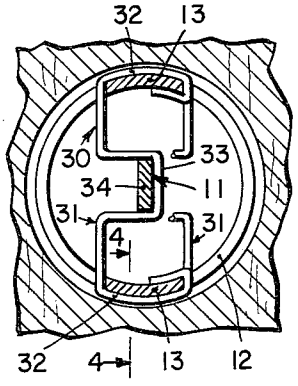


FIG. 4.

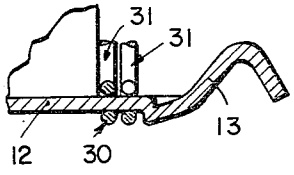


FIG. 5.

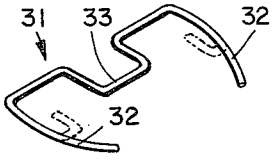
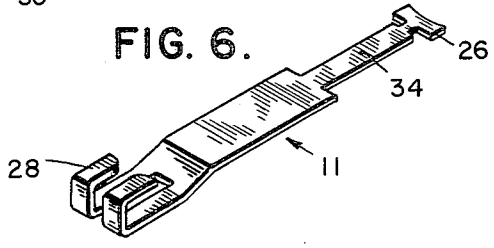


FIG. 6.



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FIG. 7.

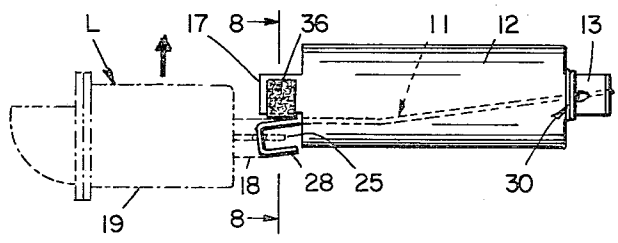


FIG. 8.

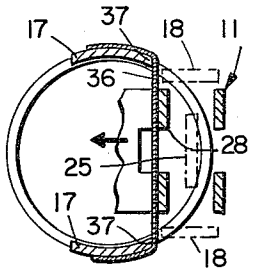


FIG. 9.

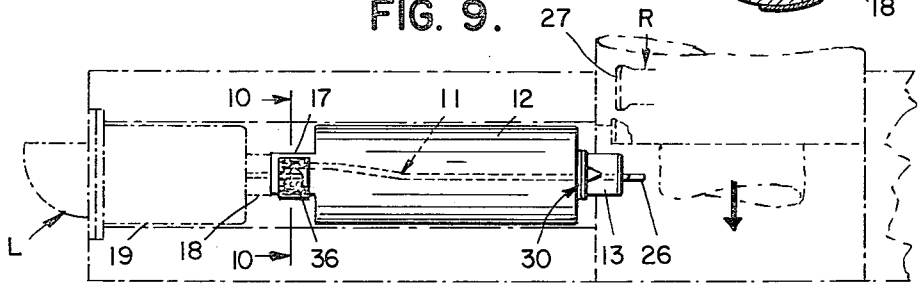


FIG. 10.

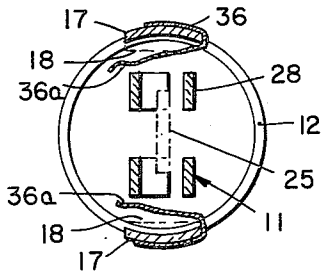


FIG. 11.

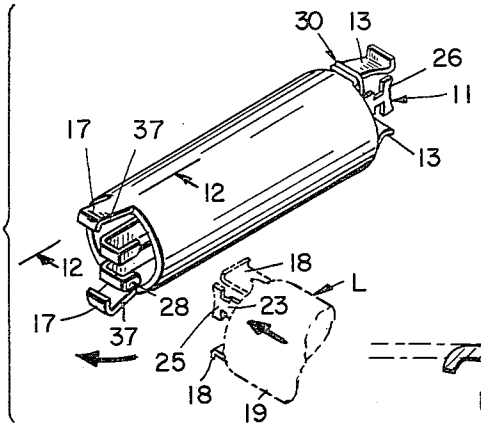
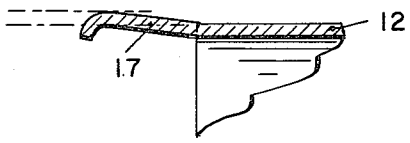


FIG. 12.



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2,765,187

EXTENSION UNIT FOR DOOR LOCK LATCHES

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Application February 20, 1956, Serial No. 566,498

1 Claim. (Cl. 292—1)

This invention relates to an extension for a spring latch bolt unit to effect a greater backset of the latch actuating unit from the edge of a door.

One object of the invention is to provide a separable interchangeable extension unit by means of which a latch actuating mechanism for a door latch may be backset from the edge of the door to a position greater than the normal or standard backset distance. Another object is to provide a simple and inexpensive extension unit for the purpose described which may be securely attached to the latch bar and to the housing for the latch actuating unit. Another object is to provide a backset extension which is interchangeable and may be of any desired length.

These and other objects are attained by my invention which will be understood from the following description, reference being made to the accompanying drawings in which:

Fig. 1 is a side elevational view of a knob-operated door latch mechanism as installed in a door, parts being broken away to show the interior arrangement;

Fig. 2 is a cross-sectional line view taken on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary sectional view taken on the line 4—4 of Figs. 2 and 3;

Fig. 5 is a perspective view of one of the elements of the wire clip spacer means before assembly;

Fig. 6 is a perspective view showing the spring latch bolt retractor bar;

Fig. 7 is a side elevational view of the extension unit having a frangible hook-supporting tape and showing in broken lines the manner of attachment of the extension unit to the latch unit;

Fig. 8 is a cross-sectional view taken on the line 8—8 of Fig. 7;

Fig. 9 is a side elevational view showing the spring latch unit and the extension unit operatively connected together and also showing the manner of connecting the bolt retractor mechanism and its housing to the extension unit connector bar and its housing in the installation in a door;

Fig. 10 is a cross-sectional view taken on the line 10—10 of Fig. 9 showing the frangible supporting tape broken and the units mechanically and operatively connected together as shown in Fig. 9;

Fig. 11 is a perspective view of my extension unit without the frangible supporting tape showing the manner of connecting the latch operating unit thereto in the absence of the supporting tape; and

Fig. 12 is an enlarged fragmentary view partly in cross-section of one of the inwardly turned connecting lugs on the extension unit housing, showing the splayed lugs of the extension unit.

My invention is particularly adapted for use in connection with lock and latch sets for doors of the type in which the spring latch unit is separately housed and

is installed in a cylindrical hole drilled inwardly from the edge of the door; and the latch operating mechanism, usually in a case and usually including door knobs, is mounted in a larger hole drilled through the door, with means for operatively connecting the inner end of the latch unit to the housing for the operating mechanism. The latch unit is normally installed in its hole first, following which the latch operating mechanism in its housing is inserted from one side of the door, and during this insertion slidingly engages lugs on the latch housing with cooperating lugs on the retractor housing and simultaneously couples the latch retractor bar with the retracting mechanism. Therefore, an extension unit, to permit a greater than normal backset of the latch operating knobs or the like, requires that the housing of the latch unit shall be connectable to the one end of the extension unit and that the other end of the extension unit is connectable to the housing for the retractor mechanism and also that the latch retracting bar of the latch unit to be connected to the retractor mechanism through an intermediate connector bar. It is desirable for the manufacturers of locks of this type generally to provide extension units of various lengths to correspond to any desired backset, the connecting means for such extension units being interchangeable as relating to the housings and the operating means of the retractor unit and the spring latch unit.

Referring to the drawings, my extension unit consists generally of the connector bar 11 which is longitudinally disposed in a tubular housing 12, the housing being provided at its end nearer the retractor with diametrically opposed out-turned connecting lugs 13 which are arranged to engage corresponding connecting ears 14 arranged adjacent a peripheral opening 15 in the housing 16 for the latch retracting mechanism indicated generally at R. The other end of the tubular housing 12 is provided with in-turned connecting lugs 17, these being disposed diametrically on the housing periphery and adapted to engage the corresponding connecting lugs 18 of the latch unit housing 19. In the preferred form shown, the corresponding in-turned and out-turned lugs dovetail or interlock by lateral sliding together of the lugs. The retractor end of the connector bar 11 is provided with a T-lug 26, and the opposite end with a bifurcated or double hook 28, adapted to engage the T-lug on the latch bolt bar 23.

In order to understand the functioning of the extension unit of this invention, the spring latch unit and the retractor mechanism unit will be briefly described. The spring latch unit L consists essentially of the latch housing 19, the latch bolt 20 reciprocally mounted therein, a spring means 21 arranged to press the bolt outwardly through the face plate 22. The latch bolt 20 is provided with a latch bolt retractor bar 23 which extends through the closing end piece 24 of the latch housing 19, and on its protruding end is provided with a pair of laterally extending lugs forming a T-lug 25. The latch unit housing 19 is also provided with outwardly turned connecting lugs 18 (as previously mentioned) adapted to engage the in-turned connecting lugs 17 of the extension unit tubular housing 12.

The retractor unit R consists essentially of mechanical means (not shown) for reciprocating the retractor 27, which has a slot 29 to engage the T-lug 26 of the extension bar 11. The retractor mechanism is enclosed in a cylindrical housing 16 having an opening 15 whose edges are provided with connecting means 14 to slidingly engage the out-turned lugs 13 of the extension unit.

The connector bar 11 is centered at its retractor end by a spacer means 30 which extends between the out-turned lugs 13. A preferred form of this grid consists of two wire clips 31, as shown particularly in Fig. 5,

which are attached by bending the ends **32** around the base of each of the out-turned lugs **13**, the center loop **33** of the two clips **31** being disposed oppositely to encircle the end **34** of the extension bar **11** inwardly from the T-lug **26**.

In the preferred form of my invention shown in Figs. 7, 8 and 9, a frangible holding tape **36** is adhesively secured across the out-turned connecting lugs **13** of the tubular housing **12**, the tape extending over the longitudinal edges **37** of the lugs which face in the direction of the bifurcated hook **28** portion of the connector bar **11**. The tape **36** holds the hook **28** to one side of the axis of the tubular housing **12** (as shown particularly in Fig. 7). The extension unit is manufactured and delivered with the hook so disposed and held against the frangible holding tape **36**. In this form the bifurcated hook **28** is easily slipped over the T-lug **25** of the latch bolt bar **23**, following which the outwardly turned lugs **18** of the latch bolt unit L are laterally slid into joining position with the in-turned lugs **17** of the tubular housing, thus completing the setback assembly of the latch bolt housing plus the extension unit as shown in Fig. 9. In this operation, the frangible tape **36** is broken by the hook **28** in its alignment with the latch bolt bar **23**, and because of the bifurcated form of the hook, the operative bars are securely fastened together. The setback assembly is ready to be inserted in its hole drilled inwardly from the edge of the door. The broken tape ends **36***a* (Fig. 10) may be left in place, as they do not interfere with the subsequent use of the extension, or they may be removed before the setback assembly is installed in its hole in the door edge. The splayed in-turned lugs **17** of the extension (Fig. 12) provide clamping action to hold the extension unit in place in the hole and for pressing the connected lugs tightly together.

The extension unit without the frangible holding tape **36** may be somewhat less conveniently joined to the latch bolt unit L by first positioning the units at approximately right angles to each other, as shown in Fig. **11**, for the purpose of inserting the T-lug **25** in the bifurcated hook **28**, following which the two unit housings are brought to parallel position and then aligned by laterally sliding the in-turned lugs **17** into position with the outturned lugs **18** of the latch unit L.

After the backset assembly of the latch unit L and the extension unit are inserted in the hole extending from the edge of the door, the retractor unit R is inserted

in its hole through the door, the connecting ears **14** of the retractor unit engaging the out-turned connecting lugs **13** of the extension unit, and at the same time the T-lug **26** engages the slot **29** in the retractor **27**, so that the movement of the retractor moves the latch bolt **20** by the connected latch bolt bar **23** and the connector bar **11** of the extension unit.

The advantages of my invention lie in its simplicity of construction and installation and in the certainty of its functioning throughout the long life of a door latch. The spring action of the spring latch bolt unit is not reduced by the extension unit because the connector bar is directly connected between the latch unit and the retractor unit, with no additional friction.

I claim:

An extension unit of the character described for use between a spring latch unit and a retractor unit comprising a tubular housing adapted to be operatively interposed between a latch retracting unit and a spring latch bolt unit, said housing having a pair of diametrically disposed out-turned lugs at the retracting unit end, said pair of lugs being adapted to engage connecting ears on the retractor unit housing, and said tubular housing having a pair of diametrically disposed in-turned lugs at the opposite end adapted to engage connecting lugs on the housing for said latch bolt unit; a connector bar axially disposed in said tubular housing, said connector bar at one end having a T-lug adapted to be operatively connected with the retractor unit, and at the opposite end having a bifurcated hook adapted to be connected to a T-lug on the latch bolt bar; a spacer means attached across the open end of said tubular housing adjacent T-lug of said connector bar, adapted to diametrically center said T-lug between said pair of out-turned lugs on said tubular housing; and a frangible tape extending between said in-turned lugs of said housing and adapted to hold said bifurcated hook in engaging position relative to the T-lug on the latch bolt bar, said tape being subsequently broken when said tubular housing is connected to the latch bolt housing by means of the in-turned lugs and out-turned lugs respectively thereon.

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