Jan. 27, 1959 R. O. BALOGH 2,871,048

DOOR LATCH

Filed Feb. 15, 1956 3 Sheets-Sheet 1

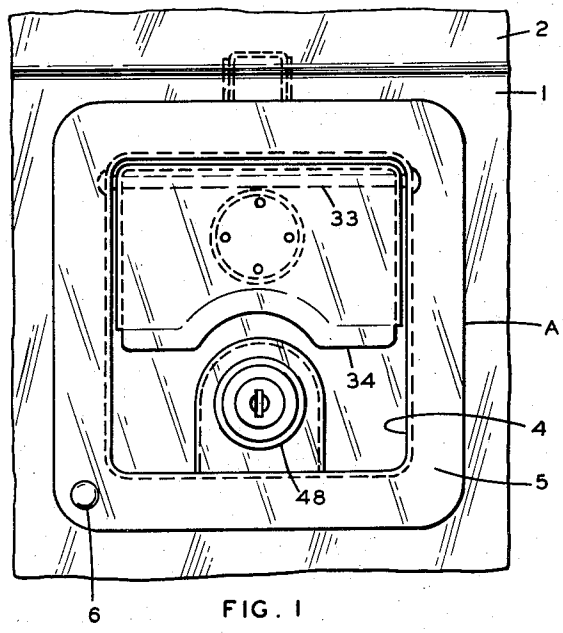



FIG. 1

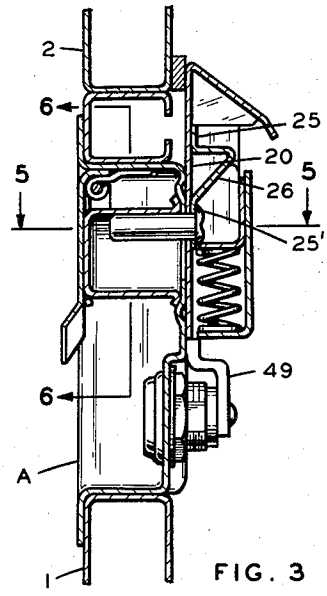



FIG. 3

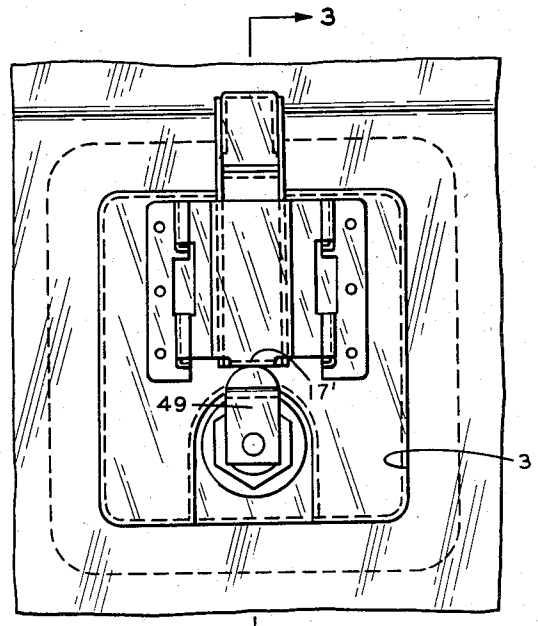



FIG. 2

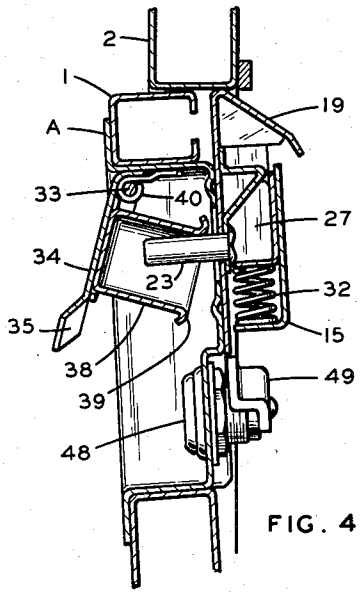



FIG. 4

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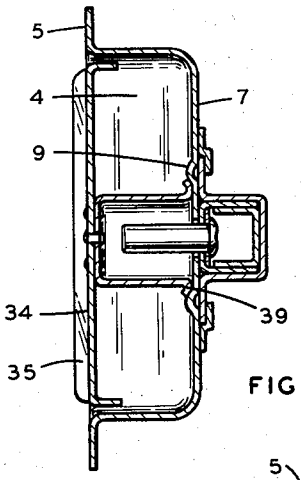



FIG. 5

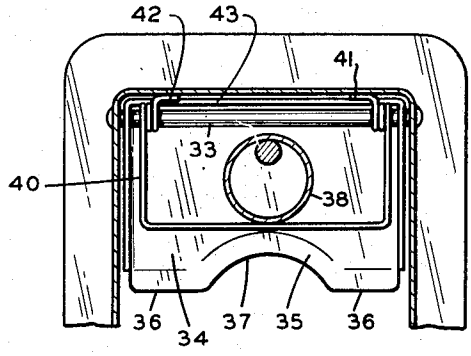



FIG. 6

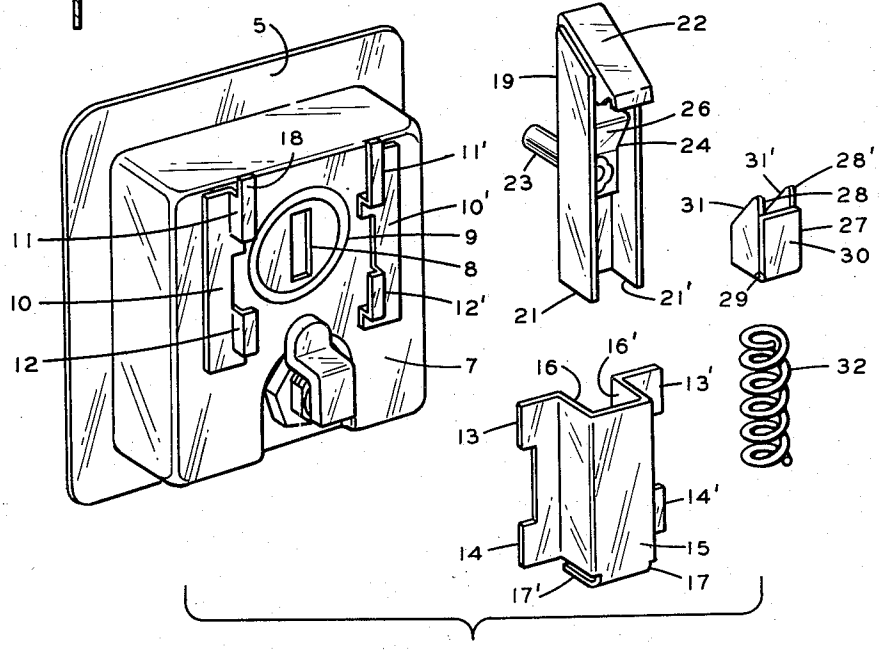



FIG. 8

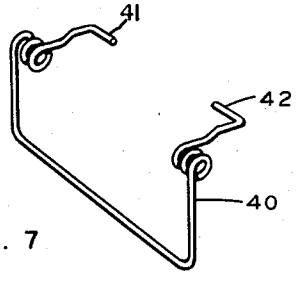



FIG. 7

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DOOR LATCH

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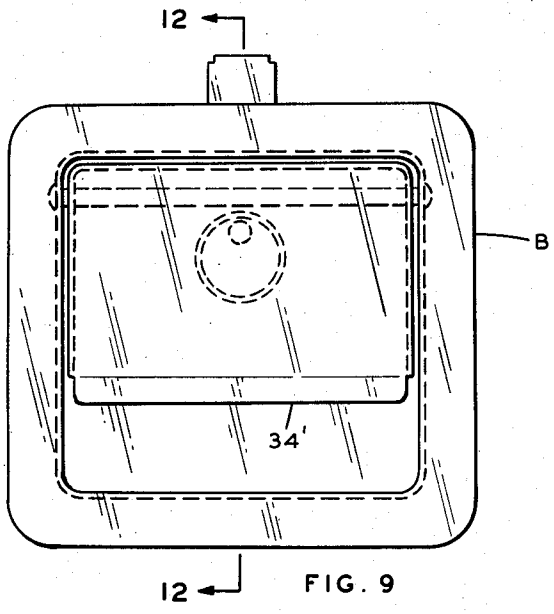



FIG. 9

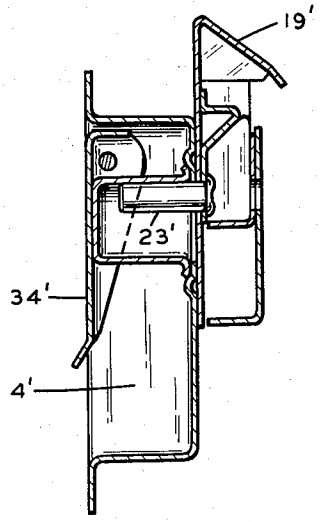



FIG. 12

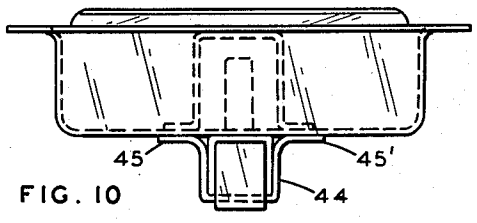



FIG. 10

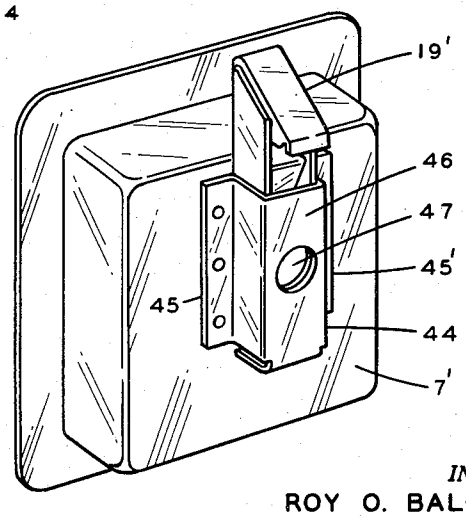



FIG. 11

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2,871,048

# DOOR LATCH

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Application February 15, 1956, Serial No. 565,673

10 Claims. (Cl. 292—173)

This invention relates in general to certain new and useful improvements in door latches and, more particularly, to a latch adapted for use on vehicular body doors, such as truck doors and the like.

It is the primary object of the present invention to provide a door latch of the type stated in which the operating handle projects outwardly in a clearly visible and readily observed position when the door is not fully shut, so that the driver or operator will not accidentally drive the vehicle with the doors improperly closed.

It is another object of the present invention to provide a door latch of the type stated which is waterproof.

It is a further object of the present invention to provide a door latch of the type stated which is easy to manipulate and is relatively shockproof and rattleproof.

It is also an object of the present invention to provide a door latch of the type stated which can be quickly assembled, disassembled, and reassembled for ease and economy both as to original manufacture as well as repair and maintenance.

With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawings—

Figures 1 and 2 are fragmentary front and rear elevational views, respectively, of a door having a door latch constructed in accordance with and embodying the present invention;

Figure 3 is a fragmentary vertical sectional view taken along line 3—3 of Figure 2;

Figure 4 is a fragmentary sectional view similar to Figure 3, showing the door and latch structure in unlocked and outwardly swung position;

Figures 5 and 6 are fragmentary sectional views taken along lines 5—5 and 6—6, respectively, of Figure 3;

Figure 7 is a perspective view of the handle-biasing spring forming a part of the present invention;

Figure 8 is an exploded perspective view of the door latch and its component parts;

Figure 9 is a front elevational view of a modified form of door latch embodying the present invention;

Figure 10 is a top plan view of the modified form of door latch shown in Figure 9;

Figure 11 is a rear perspective view of the door latch shown in Figure 9; and

Figure 12 is a vertical sectional view taken along line 12—12 of Figure 9.

Referring now in more detail and by reference characters to the drawings, which illustrate practical embodiments of the present invention, 1 designates a conventional door hingedly mounted for closure-wise disposition against a jamb 2. Preferably, though not necessarily, the door 1 and jamb 2 are fabricated of sheet metal and have not been illustrated in detail inasmuch as these elements may be of any conventional design and do not specifically constitute the present invention. For present



purposes, it is merely sufficient to point out that the door 1 is provided with a suitably flanged rectangular aperture 3 for receiving the door latch A, which comprises a stamped rectangular cup 4 having a continuous flat peripheral flange 5. It is, of course, obvious that the aperture 3 is of such size and shape as to accommodate the cup 4 and the flange 5 is tightly secured to the door 1 by means of rivets 6 or other suitable means. The cup 4 is provided with a flat back wall 7 having an oblong or somewhat elongated central slot 8, which is surrounded by a struck-up outwardly raised bead 9.

Spot-welded or otherwise rigidly secured to the rear face of the back wall 7 equidistantly on opposite sides of the slot 8, are attachment clips 10, 10', integrally including outwardly or rearwardly offset, socket-forming flanges 11, 11', 12, 12', which are arranged in transversely aligned pairs and are normally open at the top for slidably receiving and seating complementary ears 13, 13', 14, 14', projecting laterally from side flanges of a U-shaped channel 15 having side walls 16, 16', a bight 17, and an inturned abutment ear 17'. Thus the U-shaped channel 15, when seated in the flanges 11, 11', 12, 12', extends across the rear side of the slot 8 and forms a slideway which is open at the top and at the bottom is closed by the ear 17'. The upper flanges 11, 12, are also provided, preferably though not necessarily, with upwardly projecting ears 18 which can be bent over to hold the U-shaped channel 15 in place. Provided for longitudinally shiftable disposition within the slideway is a bolt 19, which is preferably formed from sheet metal and integrally includes a central section 20, side flanges 21, 21', and an angularly bent top section or striker-face 22. The central section 20 is rigidly provided with forwardly projecting pin 23 which projects shiftably through the slot 8 and an inwardly projecting boss 24 which is formed of sheet metal and is tack-welded along the flanges 25, 25', to the rear face of the central section 20. Between the flanges 25, 25', the boss 24 is provided with a downwardly and rearwardly presented inclined slide face 26 for sliding co-operation with a pressure-transmitting element 27, formed also of sheet metal and integrally including side plates 28, 28', a bight 29 and a back plate 30. The side plates 28, 28', are cut off at their upper margins in the provision of inclined faces 31, 31', for sliding contact upon the inclined under face 26 of the boss 24. Interposed between the under face of the bight 29 of the pressure-transmitting element 27 and the abutment ear 17' of the U-shaped channel 15 is a spring 32 which urges the bolt 19 upwardly and, at the same time, biases it forwardly against the back face of the back wall 7 through the action of the inclined faces 26, 31, and 31'.

Rigidly mounted in, and projecting horizontally between, the opposite side walls of the cup 4 is a hinge pin 33 for rockably supporting a handle 34, which integrally includes a grip-section 35 having outwardly flaring flanges 36 separated by a central arcuate recess 37. Welded or otherwise rigidly secured to the inner face of the grip-section 35 is a cylindrical actuator-tube 38 having its inwardly presented margin rolled back in an annular bead 39, which seats swingably within the bead 9 to afford a watertight seal across the slot 8 when the door and latch are in fully closed position shown in Figure 3. The bead 39, furthermore, bears arcuately against the pin 23, so that, as the handle 34 is swung outwardly, the bolt 19 is shifted downwardly to the position shown in Figure 4.

Mounted against the back face of the handle 34 and disposed encirclingly around the hinge pin 33 is a wire spring 40 having inwardly bent tongues 41, 42 located in underlying relation to the top flange 43 of the handle 34 for normally biasing the handle downwardly and out-

wardly to the position shown in Figure 4, whenever the bolt 19 is in downwardly shifted position for purposes presently more fully appearing.

When the door lock A is properly mounted in the door 1, the bolt 19 will engage the jamb 2, as shown in Figure 3, and will hold the door 1 securely in place. The spring 32 and pressure-transmitting element 27 will introduce a limited degree of resiliency which will compensate for wear and vibratory stresses, so that the door 1 will always remain right. In order to release the door lock A and open the door 1, the handle 34 is manually swung upwardly, causing the actuator-tube 38 to engage the pin 23 and shift the latter downwardly, thereby shifting the bolt 19 downwardly against the bias of the spring 32 until the upper end of the bolt 19 is fully retracted and the door 1 is free to swing open. As soon as the grip 35 of the handle 34 is released, the bolt 19 returns to initial position, so that the door 1 may again become locked as it is returned to closed position. Whenever the door 1 is not fully closed, the handle 34 will project outwardly from the cup 4, as shown in Figure 4, so that the driver or operator has an immediate visual signal of this condition and will not accidentally drive off with a compartment door unlatched and free to swing outwardly as the vehicle travels along the street or highway. Such accidents have occurred with conventional door latches and have resulted in injury to pedestrians, as well as the loss of tools and other valuable contents usually carried in the compartments.

The door latch A can very readily and quickly be assembled and disassembled as will be seen from Figure 8. The bolt 19, the pressure-transmitting element 27, and the spring 32 can be assembled within the U-shaped channel 15 and manually held in compressed position so that the pin 23 can be inserted through the slot 8 and, at the same time, the flanges 13, 13', 14, 14', slipped into the socket-forming flanges 11, 11', 12, 12', respectively. Thereupon, the ears 18 can be bent over, as shown in Figure 2, to hold the U-shaped channel 15 in such assembled position. The door latch A can, on the other hand, be disassembled with equal simplicity by bending the ears 18 back to upright position and reversing the above described sequence of assembly operations. Consequently, if the spring 32 should break, or any one of the other parts become worn, damaged, or inoperative so as to need replacement, this repair operation can be very easily performed if necessary or desirable. It is also equally convenient, in view of the unique, economical, and compact construction of the door latch A, to remove the rivets 6 and make a complete replacement.

It is also possible to provide a modified form of door latch B, which is substantially in all respects to the previously described door latch A, except that the attachment clips 10, 10', are eliminated and a U-shaped channel 44 is provided having straight-margined lateral flanges 45, 45', which are spot-welded to the back wall 7' of the cup 4'. The U-shaped channel 44 is furthermore provided with a rearwardly presented bight wall 46, which is provided with a relatively large centrally located aperture 47 to permit access to the rear end of the pin 23'. In this particular movement, the bolt 19' and the elements associated therewith, as previously described, must be assembled in the U-shaped channel 44 and the pin 23' thereupon inserted from the front of the cup 4'. A suitable conventional peening tool or upsetting tool can be inserted through the aperture 47 so as to upset the rearwardly presented end of the pin 23' and stake it rigidly into the bolt 19'. Thereupon, the handle 34' and its associated elements may be assembled substantially in the manner previously described.

Preferably, though not necessarily, both the door latch A and the door latch B can be provided with a conventional type of pin tumbler lock 48, which is mounted therein and is provided at its rearwardly presented end with a rotatable detent finger 49 adapted, when in locked position, to extend upwardly into endwise abutting engagement against the downwardly presented abutment flange 17', substantially as shown, for example, in Figure 2.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the door latch may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

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

1. A door latch comprising a cup-like element adapted to fit into and extend through a door with its open end presented outwardly with respect to one face of the door, said cup-like element having a back wall approximately aligned with the other face of the door and being provided with an elongated aperture, a slide-forming element secured upon the back wall in overlying relation to the aperture and projecting inwardly from said other face of the door, a bolt shiftably mounted in the slide-forming element and having an actuating element projecting forwardly through said aperture, a pivot pin disposed in outwardly spaced relation to the bolt with its longitudinal axis perpendicular to the path of movement of the bolt and in a plane parallel thereto, a handle rockably mounted in the cup-like element for rotation about the pivot pin, said handle having a grip section provided with a hollow actuator extending around and bearing against the actuating element whereby to engage and shift said actuating element and bolt downwardly responsive to rocking movement of the handle, and cooperating means on the outer face of the back wall and the actuator for sealing the elongated aperture against the passage of moisture when the bolt is in closed position.

2. A door latch comprising a cup-like element adapted to fit into and extend through a door with its open end presented outwardly with respect to one face of the door, said cup-like element having a back wall provided with an elongated aperture, a slide-forming element secured upon the back wall in overlying relation to the aperture, a bolt shiftably mounted in the slide-forming element and having an actuating element projecting forwardly through said aperture, a pivot pin disposed in outwardly spaced relation to the bolt with its longitudinal axis perpendicular to the path of movement of the bolt and in a plane parallel thereto, a handle rockably mounted in the cup-like element for rotation about the pivot pin, said handle having a grip section provided with a hollow actuator extending around and bearing against the actuating element whereby to engage and shift said actuating element and bolt downwardly responsive to rocking movement of the handle, and cooperating means on the outer face of the back wall and the actuator for sealing the elongated aperture against the passage of moisture when the bolt is in closed position.

3. A door latch comprising a lock housing adapted to fit into a door, said housing having a back wall provided with an elongated slot, a slide-forming element secured upon the interior face of the back wall in overlying relation to the slot, a bolt shiftably mounted in the slide-forming element and having a pin projecting through the slot, a handle rockably mounted in the housing, a hollow actuator operatively connected to the handle and extending around and bearing against the pin, whereby the bolt is retracted into the slide-forming element responsive to rocking movement of the handle, and co-operating means on the outer face of the back wall and the actuator for sealing the slot against the passage of moisture when the bolt is in closed position.

4. A door latch in accordance with claim 3 wherein the bolt is provided with an angular abutment within the slide-forming element and a pressure transmitting element is located within the slide-forming element and provided

with an inclined surface slidably engaged with the angular abutment.

5. A door latch comprising a supporting structure which includes a back wall provided with a slot, a slide-forming element rigidly mounted in rearward relation to the back wall and in overlying relation to the slot, a bolt shiftably mounted in the slide-forming element and having a projecting element extending operatively through the slot, a pivot pin mounted on said supporting structure in forward relation to the slot a handle rockably mounted on the pivot pin an actuator operatively connected to the handle and engaged with the projecting element of the bolt as the handle is swung outwardly, whereby the bolt is retracted into the slide-forming element responsive to outward swinging movement of the handle, and spring means encircling said pivot pin, said spring means including tongue portions abutting said handle for normally biasing the handle outwardly so that whenever the bolt is not in latching position the handle will be in outwardly swung position.

6. A door latch comprising a cup-like element adapted to fit into and extend through a door with its open end presented outwardly with respect to one face of the door, said cup-like element having a back wall, a bolt operatively mounted on the rear side of the cup-like element for sliding movement into and out of fully latched position, a handle rockably mounted in the cup, said handle being so positioned with respect to the cup as to swing from a closed position substantially within the cup-like element to an open position wherein a substantial portion of said handle is disposed outside the confines of the cup-like element, means operatively connecting the bolt and the handle, and means for holding the handle in said open position whenever the bolt is not in fully latched position, whereby said handle affords a visible signal indication showing that the bolt is not in fully latched position.

7. A door latch comprising a cup-like element adapted to fit into and extend through a door with its open end presented outwardly with respect to one face of the door, said cup-like element having a back wall, a bolt operatively mounted on the rear side of the cup-like element for sliding movement into and out of fully latched position, a handle rockably mounted in the cup, said handle being so positioned with respect to the cup as to swing from a closed position substantially within the cup-like element to an open position wherein a substantial portion of said handle is disposed outside the confines of the cup-like element, means operatively connecting the bolt and the handle, and spring means for holding the handle in said open position whenever the bolt is not in fully latched position, whereby said handle affords a visible signal indication showing that the bolt is not in fully latched position.

8. A door latch comprising a housing adapted to fit into a door with its open end presented outwardly with respect to one face of the door, said housing having a back wall provided with a slot, attachment elements rigidly mounted on the rear face of said back wall having retention recesses formed therein, a slide-forming element removably mounted in the retention recesses and extending over the slot, a bolt shiftably mounted in the slide-forming element and having a pin-like element projecting operatively through the slot, a handle rockably mounted in the housing for rotation around an axis perpendicular to the line of movement of the bolt, actuator means operatively connecting the handle with the bolt, whereby the bolt is retracted into the slide-forming element responsive to rocking movement of the handle, and means totally enclosing the slot to form a water-tight seal when the bolt is in fully latched position.



9. A door latch comprising a lock housing adapted to fit into a door, said housing having a back wall provided with an elongated slot, a slide-forming element secured upon the interior face of the back wall in overlying relation to the slot, a bolt shiftably mounted in the slide-forming element and having a pin projecting through the slot, a handle rockably mounted in the housing, and a tubular sleeve rigidly secured upon the handle, said sleeve extending around and bearing against said pin whereby to engage and shift the pin and bolt downwardly responsive to rocking movement of the handle, said sleeve furthermore being provided with means for engagement with the back wall whereby to enclose said slot when the handle is in inwardly rocked position.

10. A door latch comprising a lock housing adapted to fit into a door, said housing having a back wall provided with an elongated slot, a slide-forming element secured upon the interior face of the back wall in overlying relation to the slot, a bolt shiftably mounted in the slide-forming element and having a pin projecting through the slot, a handle rockably mounted in the housing, a tubular sleeve rigidly secured upon the handle, said sleeve extending around and bearing against said pin whereby to engage and shift the pin and bolt downwardly responsive to rocking movement of the handle, an annular shoulder formed on the back wall and encircling the slot whereby to form a recess entirely around the slot, and an annular bead on the end of the sleeve shaped and sized for seal-forming engagement in the recess.

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