

UNITED STATES PATENT OFFICE.

CURTIS MAXON, OF LOS ANGELES, CALIFORNIA.

LATCH.

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To all whom it may concern:

Be it known that I, CURTIS MAXON, a citizen of the United States, residing at Los Angeles, county of Los Angeles, State of California, have invented new and useful Improvements in Latches, of which the following is a specification.

This invention is a latch for cupboard doors and the like, controlled by a push button movable perpendicularly to the surface of the door and actuating operating mechanism which extends through the door.

It is the object of the invention to provide bolt mechanism for a latch of this character, movable across the rear surface of the door for projecting or retracting said bolt transversely to the direction of movement of the operating mechanism, whereby said bolt may engage or disengage a retaining catch mounted on either the door frame or a shelf of the cupboard.

It is a further object of the invention to provide extremely simplified operating mechanism for shifting the bolt of the latch transversely to the direction of movement of the operating mechanism; and to automatically return the bolt of the latch to engaging position upon release of said operating mechanism.

It is a still further object of the invention to readily center the operating mechanism and maintain the parts in operative engagement after initial adjustment thereof; and to also provide for adjusting the bolt mechanism transversely of the operating means, so as to conveniently adapt the latch to a door having either a straight or rabbeted edge, without necessitating adjustment of the operating mechanism.

The invention will be understood from the following description of the accompanying drawings, in which,

Fig. 1 is a horizontal section through the latch mounted on a cupboard door.

Fig. 2 is a front elevation of the operating mechanism of the latch.

Fig. 3 is a rear elevation of the latch mechanism partly broken away.

Fig. 4 is a detail section on the line 4—4 of Fig. 1.

Fig. 5 is a front elevation of the retaining washer of the operating mechanism.

Fig. 6 is a transverse section on the line 6—6 of Fig. 1.

Fig. 7 is a section similar to Fig. 1 showing the latch mechanism adjusted for use upon a door having a rabbeted edge.

In the drawings, the frame of a cupboard door is shown at 1, with a door 2 adapted to swing to closed position in said frame as shown in Figs. 1 and 7.

A hole 3 for the operating mechanism of the latch is bored through the rail of the door at any desired height, and a casing for push button operating mechanism is mounted on the front of the door rail over said hole, and a casing for the bolt of the latch is positioned on the back of the door over said hole.

The casing for the push button operating mechanism comprises a washer 4, having an axially offset central portion 5 adapted to be received in the end of hole 3 at the front of the door for centering said washer.

An operating rod 6 is slidably mounted in an axial bore in the washer, the end of the rod which projects outwardly from the washer being threaded to receive a push button 7. A coil spring 8 is mounted on rod 6 between washer 4 and push button 7, with the inner end of said spring received in the offset 5 of said washer.

The surfaces of offset 5 and push button 7 which engage the ends of spring 8 are radially corrugated as shown at 9, and the ends 10 of said spring are bent so as to engage said corrugations, in order that the spring may hold the push button and rod 6 against rotation relative to washer 4 after initial adjustment of the parts.

A casing 11 is mounted on washer 4 so as to enclose rod 6, spring 8, and the inner end of push button 7, the outer end of said push button extending outwardly beyond said casing for manual engagement and being held against displacement by a shoulder 12 on the end of the casing engaging a cooperating shoulder 13 on the push button. Casing 11 may be held in position by screws 14 extending through the same and washer 4 into the rail of door 2.

The casing for the bolt of the latch is shown at 15, mounted on the inner surface of the rail of the door by flanges 16 project-

ing laterally from said casing and fixed to the door rail by screws 17. The casing 15 has an open base, and the length thereof extends transversely of the door rail with said open base overlying hole 3 and extending beyond the same transversely of the vertical door rail.

A closure plate 18, shown as U-shaped in cross-section, is mounted in the open base of casing 15, said plate having a recess 19 in one end adapted to be engaged by a suitable tool for removing the plate when disassembling the latch. Elongated slots 20 and 21 are provided in the medial portion of the bottom of plate 18, said slots being in longitudinal alinement lengthwise of casing 15 and separated by a partition 22 forming a part of plate 18.

A bolt 23 is longitudinally slidable in casing 15, said bolt being preferably square in cross-section with its front end projecting through a similar squared aperture in the end of the casing. The rear end of the bolt forms a shoulder 24 inside of the casing, with a pin 25 projecting longitudinally therefrom through a suitable aperture in the rear end of casing 15. A coil spring 26 encircles pin 25 with its respective ends abutting against shoulder 24 and the rear wall of the casing, for normally projecting the front end of the bolt from casing 15 and transversely of the vertical rail of door 2.

The means for retracting the bolt longitudinally of casing 15 and transversely of the door rail, against the tension of spring 26, comprises an arm 26 projecting transversely from the bolt inside of casing 15, and extending through one or the other of slots 20—21 into hole 3 in alinement with operating rod 6. Arm 26 and rod 6 have end abutment surfaces 27, inclined as shown in Fig. 1, relative to the directions of movement of both the bolt 23 and said operating rod, so that when the rod is pushed inwardly against the tension of spring 8, arm 26 will be shifted laterally relative to said operating rod for retracting bolt 23 into casing 15.

Arm 26 is adjustable lengthwise of bolt 23, as by providing a threaded stud 28 on the end of said arm adapted to be received in one or the other of threaded bores 29 spaced longitudinally of said bolt. The threaded bores 29 are so positioned that with arm 26 mounted in one or the other thereof, said arm will project through either slot 20 or 21, the elongation of said slots permitting movement of the arm and bolt for retraction or projection of the latter, with the ends of said slots and partition 22 limiting said movement of the bolt.

When mounting the latch upon a door, hole 3 may be bored at any desired height and in the usual spaced relation from the

edge of the door, the push button operating mechanism being mounted concentrically over said hole as previously described. The casing 15 is shifted transversely of the vertical door rail relative to hole 3, until arm 26 secured to bolt 23 at either of the threaded bores 29 and projecting through one or the other of slots 20—21, is in alinement with operating rod 6. The casing is fixed in adjusted position by screws 17, said adjustment of the casing alining the forward end of the bolt 23 when in its projected position, with the edge of a door having either a straight edge as shown in Fig. 1, or a rabbeted edge as shown in Fig. 7, without changing the position of the push button operating mechanism of the latch, relative to the edge of the door.

A retaining catch adapted to be engaged by the bolt of the latch when said bolt is in projected position, and adapted to be disengaged by said bolt when the latter is retracted, is mounted on door frame 1, said catch being shown as a plate 30 fixed in horizontal alinement with the bolt of the latch by screws 31, and having a lip 32 projecting beyond the edge of the door frame for cooperation with bolt 23.

The construction as thus described permits of mounting the latch at any desired height on a door, and also provides for properly positioning the latch on a door having either a straight or rabbeted edge, without changing the position of the push button operating mechanism of the latch which extends through said door.

It will be apparent that various changes may be made in the construction, combination, and arrangement of parts as thus described, without departing from the spirit of the invention.

I claim:

1. A latch adapted to be mounted upon a support having a hole therethrough, said latch comprising a bolt adapted for retraction and projection, operating mechanism movable in said hole, an actuating connection between said operating mechanism and said bolt, a member on said support having said operating mechanism projecting there-through, said member having a projection extending into said hole for centering the operating mechanism therein, a casing on the projecting end of said operating mechanism, and attaching means extending through said casing and said centering member into said support.

2. A latch adapted to be mounted upon a support having a hole therethrough in spaced relation from an edge of said support, said latch comprising a casing on the back of said support over said hole, means for adjusting the casing relative to said edge of the support and transversely of the axis of said hole, a bolt in said casing adapt-

ed for projection and retraction relative to said edge of the support, an arm projecting from said bolt into said hole, means for adjusting said arm along said bolt in the direction of movement of the latter, a rod axially movable in said hole, and an actuating connection between said rod and said arm for moving said bolt by movement of said rod.

3. A latch comprising a movable bolt, a fixed washer, an axially movable operating rod extending through said washer, cooperating abutments on said bolt and said operating rod for moving said bolt by axial movement of said rod, a head fixed on said rod, a coil spring on said rod between said head and said washer, and radial corrugations in the confronting surfaces of said head and washer engaging the ends of said spring.

4. A latch comprising a movable bolt, a fixed support, operating mechanism movable through said fixed support, cooperating abutment surfaces on said bolt and said operating mechanism for moving said bolt by movement of said operating mechanism, and means including a coil spring having its ends fixed relative to said fixed support and

said operating mechanism for fixing said cooperating abutment surfaces against relative rotation.

5. A latch adapted to be mounted upon a support having a hole therethrough, comprising an operating rod longitudinally movable in said hole and having manual engaging means at its front end, yieldable means between said manual engaging means and said support for fixing said operating rod against rotation relative to said support and normally projecting said operating rod outwardly from said support, a casing on the back of said support, a bolt in said casing movable perpendicularly to the direction of movement of said operating rod, yieldable means for moving said bolt in one direction, and cooperating abutment surfaces on said bolt and said operating rod inclined relative to the directions of movement of both said bolt and said operating rod so as to shift said bolt against the tension of said yieldable means by movement of said operating rod into the hole in said support.

In testimony whereof I have signed my name to this specification.

CURTIS MAXON.