Dec. 13, 1955 A. A. LAWSON 2,726,889

LATCH

Filed July 24, 1952

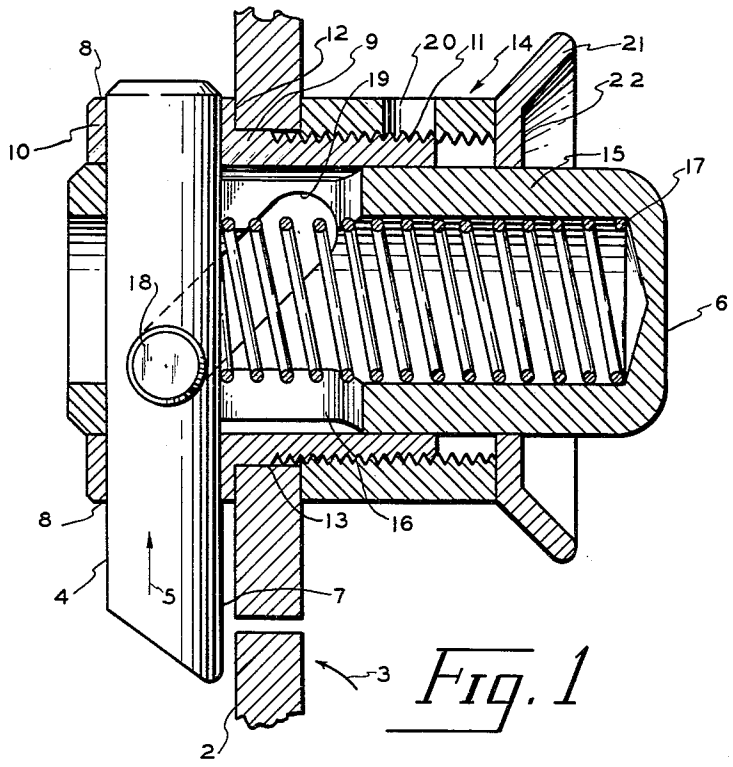


FIG. 1

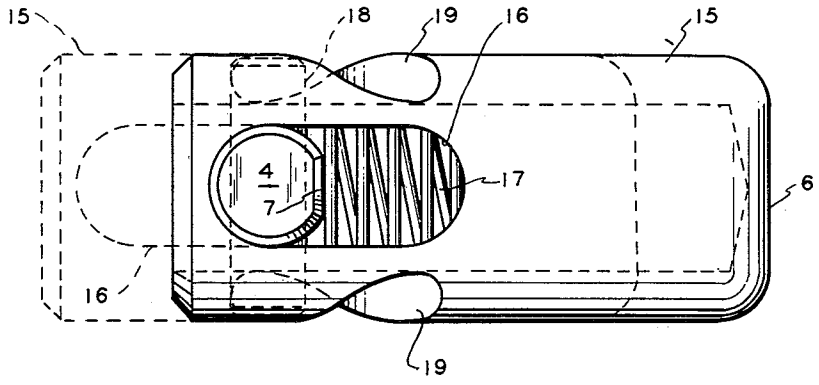


FIG. 2

INVENTOR
A. ARNOLD LAWSON

BY Hyman Kurtz

ATTORNEY

United States Patent Office 2,726,889 Patented Dec. 13, 1955

2,726,889

LATCH

Axel Arnold Lawson, Arlington, Va., assignor to Melpar, Inc., Alexandria, Va., a corporation of New York

Application July 24, 1952, Serial No. 300,592

6 Claims. (Cl. 292—170)

The present invention relates generally to latching devices, and more particularly to latching devices adapted to be rapidly secured in a thin wall, and which are fabricated of a minimum number of economically fabricated components.

Briefly described, the latch of the present invention includes a cam operated bolt, which slides parallel to a wall in which the latch is secured. The bolt extends through a cylindrical cam actuator, and is provided with a transverse pin which rides in a cam slot in the cam actuator. The cam slot extends at an angle, say 45°, to the direction of travel of the bolt, and to the direction of travel of the cam actuator, the latter traveling perpendicularly to the wall. The bolt, cam and actuator are fabricated as a unit, in a supporting element, which may be inserted into an aperture in the wall, and is then clamped to the wall by means of a nut which threadedly engages an externally threaded portion of the supporting element. If desired the supported element may be prevented from rotating and easily aligned when mounting, by providing a flat thereon which mates with a corresponding flat in the wall aperture.

It is a broad object of the invention to provide a novel cam operated latch.

It is another and more specific object of the invention to provide a novel cam operated latch, constructed of very few parts, easily operated, small and neat in appearance, economical to fabricate, and easy to mount on a thin wall.

It is still another object of the present invention to provide a novel cam operated latch which may be clamped in a single aperture in a thin wall, by threaded engagement of its own elements, and without requiring subsidiary bolts, screws, mounting holes, and the like.

The above and still further features, advantages and objects of the invention will become apparent upon consideration of the following detailed description of a preferred embodiment thereof, especially when taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a view in longitudinal section of an embodiment of the invention; and

Figure 2 is a view in elevation of a portion of the mechanism of Figure 1, particularly displaying a camming arrangement.

Referring now more specifically to the drawings, the reference numeral 1 denotes a portion of a fixed wall, and the reference numeral 2 a portion of a closure, as a hinged door, movable with respect to the fixed wall 1 in the direction of the arrow 3. To prevent such movement there is provided a bolt 4, which may be withdrawn in the direction of the arrow 5 in response to pressure exerted on the knob 6, thus to release the closure 2 for movement.

The bolt 4 may be generally of cylindrical cross section, but is provided with a flat 7, which extends parallel with the wall 1.

The bolt 4 is slidably supported in transverse apertures 8 extending through the wall of a hollow cylindrical support 9, on a diameter thereof. The support 9 includes a portion of increased diameter 10 and a portion of decreased diameter 11, externally, providing a shoulder 12 at their junctions, which rests against the wall 1. The portion of decreased diameter 11 of the support 9 is threaded and extends through an aperture 13 in wall 1, to be threadedly engaged by a nut 14, and thereby clamped to the wall 1.

Slidable co-axially internally of the hollow cylindrical support 11 is a further hollow cylinder 15, having a closure at one end which constitutes the push-knob 6. The hollow cylinder 15 is provided with a longitudinal closed slot 16, extending transversely thereof, and of adequate width and length to accommodate the bolt 4, at all operative positions of the cylinder 15. Nesting within the hollow cylinder 15, and extending between the flat 7 on the bolt 4 and the inner wall of the knob 6, is a compression spring 17. Pressure on the knob 6, against the counterforce of the spring 17, causes the cylinder 15 to move to the left, as seen in Figure 1, the bolt 4 finding free play in the slot 16 during the movement.

A pin 18 is force fitted in the bolt 4, extending transversely therethrough, and parallel to the wall 1, protruding for a short distance in either direction beyond the confines of the bolt 4. The protruding ends of the pin 18 ride in cam slots 19, formed in the wall of the cylinder 15, and extending generally at a 45° angle to the axis of the cylinder 15. Thereby, when the cylinder 15 is moved to the left, as seen in Figure 1, the ends of pin 18 are forced in the direction of the arrow 5, and move the bolt 4, correspondingly, to unlatching position. When pressure on the knob 6 is removed the compression spring 17 forces the cylinder 15 to the right, as seen in Figure 1, and the cam slots 19 correspondingly cause the ends of pin 18, and hence the bolt 4, in the opposite direction, i. e. to latching position.

The nut 14 is provided with a circular aperture 20, in its wall, which may be engaged by a suitable wrench, to turn the nut 14 in assembling or disassembling the latch to wall 1.

The nut 14 is further provided with a flaring skirt 21, and a closure flange 22, which rides lightly on the outer wall of cylinder 15, and provides a closure for the latch mechanism, as well as a guide and guard for the finger of an operator, in pressing the knob 6.

While I have described and illustrated a preferred embodiment of the invention, it will be clear that variations of detail may be resorted to, without departing from the true scope of the invention as defined in the appended claims.

What I claim and desire to secure by Letters Patent of the United States is:

1. A latch arranged to be mounted in a single aperture in a wall comprising, a hollow supporting member, said hollow supporting member having a shoulder for resting against said wall and a threaded portion for extending through said aperture, a nut for threadedly engaging said threaded portion and clamping said hollow supporting cylinder to said wall, a bolt extending slidably through transverse apertures in the walls of said hollow supporting member, a hollow actuating member slidable coaxially in said hollow supporting member, said hollow actuating member having a transverse slot embracing said bolt in all positions of said hollow actuating member during axial movement thereof, a cam slot in said actuating member, a cam follower secured to said bolt, said cam slot making a large angle with the axis of said members and means for biasing said bolt to one predetermined position.

2. In a latch suitable for securing in a single aperture in a wall, a first hollow member having internal threads,

a second hollow member having external threads for threadedly engaging said internal threads, said first and second hollow members having wall engaging surfaces arranged to be brought toward each other in response to relative screw motion of said hollow members during threaded engagement of said internal and external threads, a bolt supported by said second hollow member, said second hollow member including transverse apertures for transversely slidably supporting said bolt, a spring biased push button located internally of said hollow members and movable axially therein, said push button including a cam slot extending angularly of the axis of said hollow members, said bolt including a cam follower engaging said cam slot for moving said bolt transversely of said hollow members in response to activation of said push button.

3. A door latch adapted to be mounted in a single aperture in a thin wall, comprising, a first hollow cylinder having internal threads, a second hollow cylinder co-axial with said first cylinder and having external threads threadedly engaging said internal threads, each of the said cylinders having an end wall, the end wall of one of said cylinders being in opposed relation to the end wall of the other of said cylinders for clampwise engaging said thin wall, a bolt extending transversely of said second hollow cylinder, and a pin extending transversely of said bolt, a hollow cylindrical push button coaxial with said cylinders and extending slidably axially within said second hollow cylinder, and a slot cam extending at an angle to the axes of said cylinders, said slot cam actuable axially of said cylinders in response to actuation of said hollow cylindrical push button.

4. A latch suitable for securing in a single aperture of a wall, comprising a hollow member having a longitudinal axis and adapted to extend through said aperture perpendicularly of said wall and having an external shoulder abutting one side of said wall, a push button slidable axially of said hollow member and slidably actuable from the other side of said wall, said push button including a cam, a bolt supported by said hollow member for movement transversely of said axis, said bolt located adjacent said one side of said wall, a cam follower secured to said bolt and engaging said cam for motion transversely of said longitudinal axis in response to actuation of said push button and means for securing said latch to said wall.

5. A latch adapted to be mounted in a single aperture in a wall, comprising, a hollow supporting cylinder having a transverse aperture, a bolt slidable in said transverse aperture, a second hollow cylinder slidable axially within said hollow supporting cylinder, said second hollow cylinder including a longitudinal slot embracing said bolt, a cam slot in said second hollow cylinder, a cam secured to said bolt and engaging said cam slot, said cam slot extending at an angle to the axis of said second cylinder, a compression spring located internally of said second hollow cylinder, pressing at one end on said bolt and means for securing said latch to said wall.

6. A latch arranged to be mounted in a single aperture in a wall, comprising, a hollow supporting cylinder, a bolt, said bolt slidably mounted in transverse apertures extending diametrally of said hollow supporting cylinder, a cam pin extending through said bolt in a direction perpendicular ot its longitudinal axis and parallel to said wall, a hollow actuating cylinder axially slidable within said hollow supporting cylinder, said hollow actuating cylinder having an end closure, a cam slot located in said hollow actuating cylinder and engaging said cam pin, spring means located internally of said hollow actuating cylinder and extending between said end closure and said bolt and means for securing said latch to said wall.

References Cited in the file of this patent

UNITED STATES PATENTS

1,111,235	Redin	Sept. 22, 1914
2,533,377	Keef	Dec. 12, 1950
2,544,611	Nottingham	Mar. 6, 1951
2,573,061	Raymond	Oct. 30, 1951

FOREIGN PATENTS

225,523	Switzerland	May 1, 1943