June 24, 1958 R. N. SELLON, JR. 2,840,407

LATCH

Filed March 19, 1956

Fig. 1

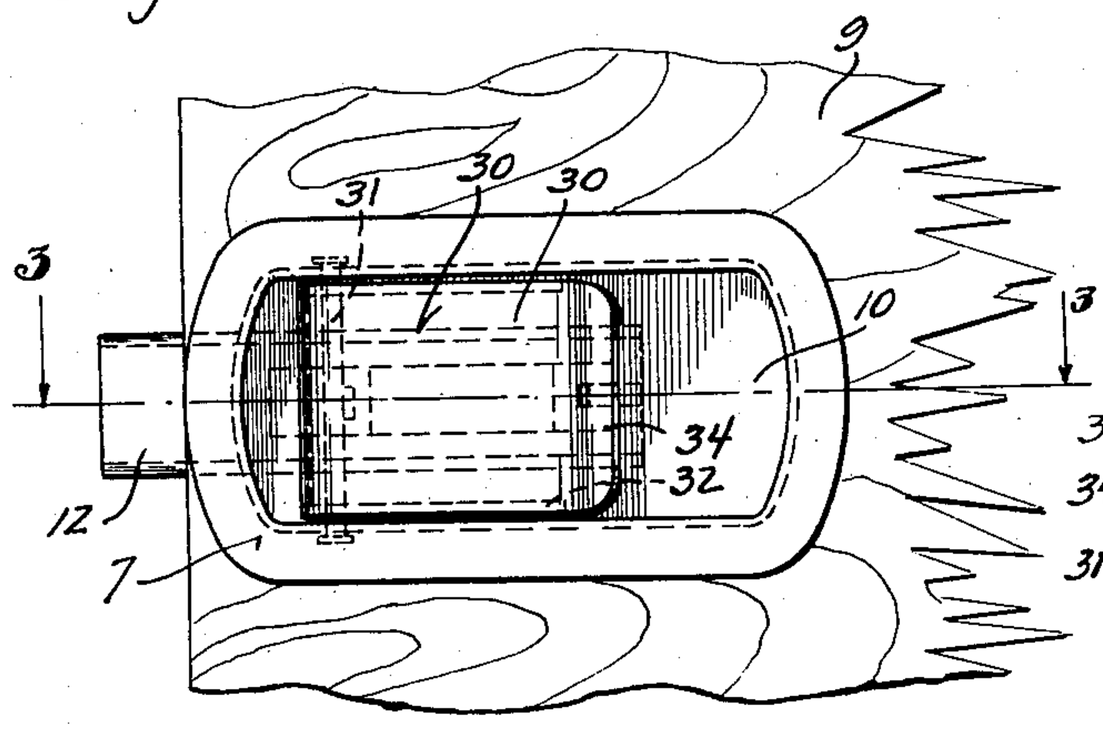
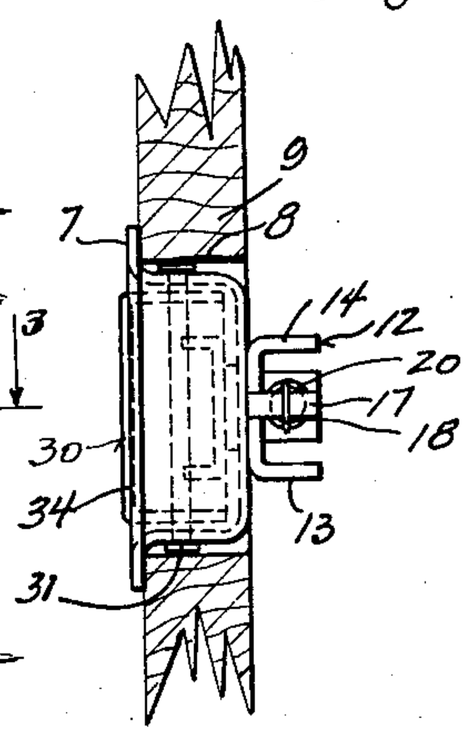


Fig. 2



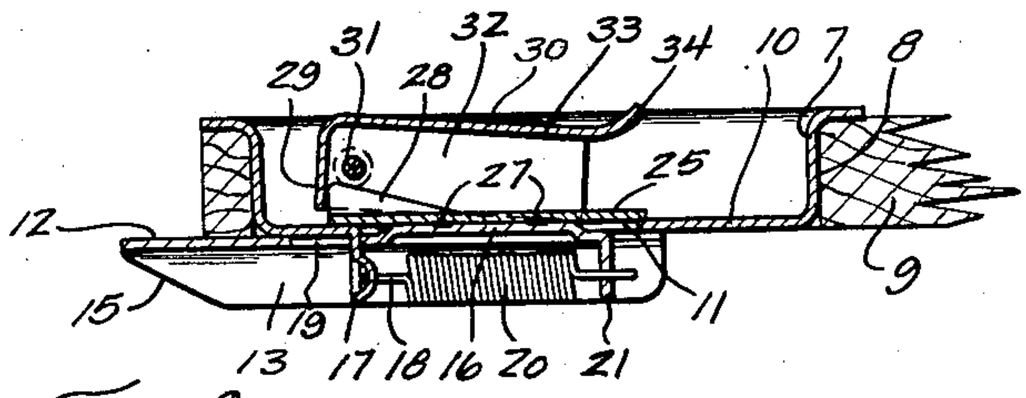


Fig. 3

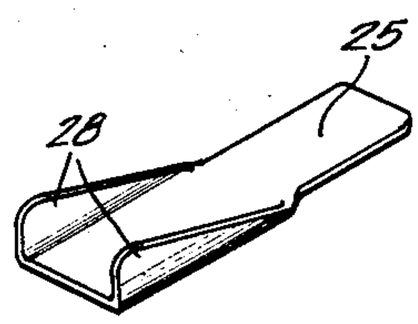


Fig. 5

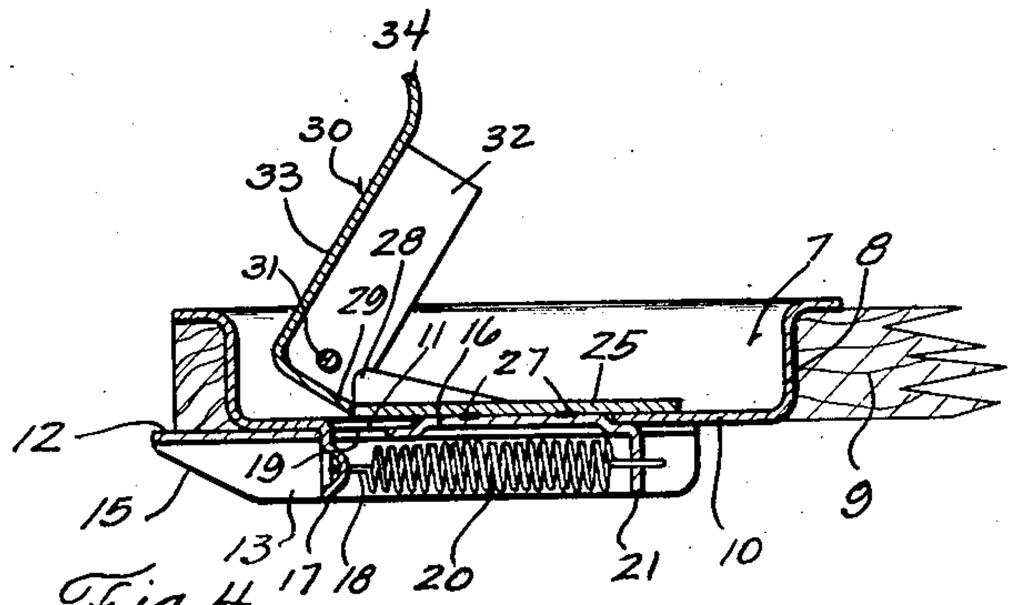


Fig. 4

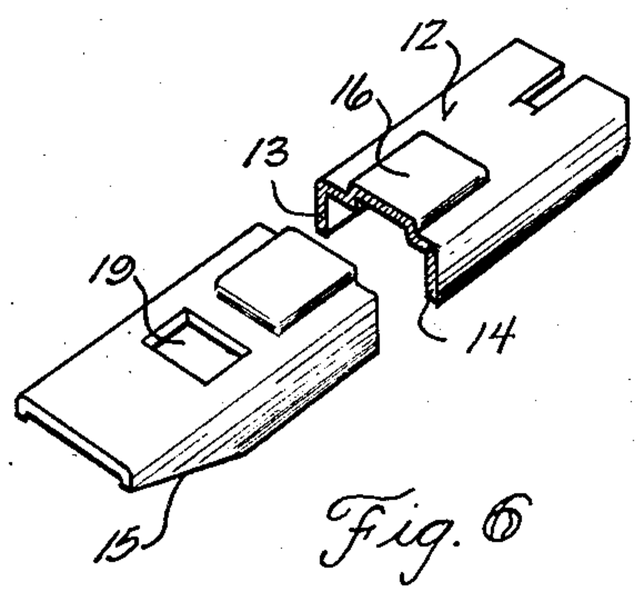


Fig. 6

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LATCH

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10 Claims. (Cl. 292—169)

This invention relates to a latch.

It is the object of the invention to provide a simplified and more smoothly operable construction. The paddle lever fits into a recessed housing and is pivoted upon a pintle which spans the recess. The housing has a slot in its back wall a portion of the material from which is thrust rearwardly in the form of a tongue to provide a seat anchorage for a tension spring.

A bolt slides on the rear face of the back wall of the housing and has a forwardly embossed portion which fits into the slot of the housing to guide the bolt in the course of its reciprocation. The spring anchorage tongue of the housing projects through an aperture in the bolt. The bolt has the form of a channel in which its tension spring is disposed, the end of the spring other than that connected with the housing being connected with another tongue which is a part of the bolt.

In order to hold the bolt to the housing and at the same time to transmit motion of the paddle lever thereto, a plate is spot welded or otherwise connected to the forwardly embossed portion of the bolt and is provided with upstanding ears engaged by the closed front end of the paddle lever. Thus, the raising of the paddle lever cams these upstanding ears in a bolt-retracting direction against tension of the spring. Upon release of the paddle lever, the spring not only returns the bolt but the lever to the original position.

In the drawings:

Fig. 1 is a view in front elevation of a paddle latch organization as assembled on the face of a door which is fragmentarily illustrated.

Fig. 2 is a view of the paddle latch assembly in rear elevation, the door being shown in section.

Fig. 3 is a detail view taken in section on line 3—3 of Fig. 1.

Fig. 4 is a view similar to Fig. 3 showing the paddle lever raised to retract the bolt.

Fig. 5 is a detail view in perspective of the plate which contains the bolt to the housing.

Fig. 6 is a fragmentary detail view of the bolt in perspective, portions being broken away to show it in cross section.

The housing **7** is pan-shaped and is placed in opening **8** in door **9** in the usual way. Its rear wall **10** is provided with a slot **11** extending longitudinally of the housing.

The bolt **12** is channel-shaped, having sides **13** and **14** which are beveled at **15**. The web of the channelled bolt **12** spans slot **11** of the housing and has an intermediate outwardly embossed area at **16** which is elongated longitudinally of the bolt and corresponds in width to the slot **11**. The embossed portion **16** of the bolt is less long than the slot to permit of movement of the bolt between its advanced and retracted positions, the embossed portion **16** of the bolt bearing on the housing at the sides of the slot and serving to guide the bolt with respect to the housing.

A tongue **17** formed of the material of the housing and

extending rearwardly from the forward end of slot **11** provides an anchorage for the eye **18** at one end of tension spring **20**. The tongue **17** extends through an opening **19** in the bolt, the spring being housed within the bolt channel. The other end of the spring is anchored to tongue **21** of the bolt **12**.

In order to hold the bolt in place for reciprocation of its embossed portion **16** in the slot **11**, a retaining and carrying plate **25** is disposed within the pan-shaped housing **7** to span the slot **11** and to slide longitudinally of the rear wall **10** of the housing. The plate **25** is connected with the embossed portion **16** of the bolt by spot welding **27** or otherwise. This connection is made through the slot **11** to hold the bolt in sliding engagement with the outside of wall **26**. Slide plate **25** reciprocates with the bolt in bearing engagement with the inner surface of that wall.

The plate **25** has upstanding laterally spaced ears **28** which are engaged by the forward ends **29** of paddle lever **30**. The paddle lever is pivoted on a pintle **31** which spans the pan-shaped housing **7**. The pintle passes through the side flanges **32** of the paddle lever which are connected with the end wall **29** and the top web **33** thereof. The extreme rear portion **34** of the top web **33** may be turned upwardly to receive the operator's fingers if desired.

The device is practically rattle-free, since the forward ends of the cam flanges **28** are engaged under tension of spring **20** at all times with the forward wall **29** of the paddle lever. Moreover, the embossed portion **16** is substantially equal in thickness to the rear wall **10** of the housing so that the rear wall is closely embraced between the plate **25** and the bolt **12**. The embossed portion **16** likewise has a relatively close sliding fit between the margins of the housing at slot **11**.

The raising of the free end portion **34** of the paddle lever about pintle **31** causes the forward wall **29** of the lever to cam the flanges **28** rearwardly, thus imparting rearward movement to bolt **12** in opposition to the tension spring **20**. Fig. 4 shows the bolt in its fully retracted position from which it is returned by spring **20** to the position of Fig. 3 as soon as thrust from the paddle lever is released.

I claim:

1. In a latch, the combination with a mounting member having a slotted wall, of a bolt wider than the slot in said wall and reciprocable on the outer face of the wall and provided with an embossed portion narrower than the bolt and corresponding in width to the slot of said member and disposed therein to guide the bolt in the course of its reciprocation with respect to the member, a slide wider than the bolt and fastened to the embossed portion of the bolt and spanning the slot along the inner face of the wall to retain the bolt on said wall, and means for reciprocating the bolt.

2. In a latch, the combination with a mounting member having a slotted wall, of a bolt reciprocable on the outer face of the wall and provided with an embossed portion corresponding in width to the slot of said member and disposed therein to guide the bolt in the course of its reciprocation respecting the member, means for retaining the bolt to the wall of the member, and means for reciprocating the bolt, the means for retaining the bolt comprising a plate having bearing contact with the inner face of the housing and spanning the slot therein, said plate having connection with the embossed portion of the bolt.

3. The device of claim 2 in which the means for reciprocating the bolt comprises a spring biasing the bolt toward an extended position and a lever having camming engagement with said plate and pivoted to the member for retracting the bolt.

4. In a device of the character described, the combination with a mounting plate provided with a longitudinal slot, of a channel-shaped bolt comprising a web and side flanges, the web being in bearing engagement with the mounting plate beside the slot and having an embossed portion substantially corresponding in width to the slot and extending into the slot to bear on the margins of the mounting plate at opposite sides of the slot for the guidance of the bolt, the slot being longer than the embossed portion of the bolt web whereby to accommodate reciprocation of the bolt respecting the mounting plate, a spring housed within the channel of the bolt, the mounting plate and bolt being provided with spring anchorages with which the ends of the spring are engaged, and a slide spanning the slot of the mounting plate and connected with the embossed portion of the bolt web for maintaining the said embossed portion in the slot of the mounting plate while accommodating bolt reciprocation, and means for reciprocating the bolt against the tension of the spring.

5. The device of claim 4 in which the last mentioned means comprises a lever having a pivotal mounting on the mounting plate and cam means on the slide with which a portion of the lever is engaged, the pivotal movement of the lever effecting connection of the cam means in a direction to retract the bolt against the bias of the spring.

6. In a device of the character described, a sub-combination for association with a slotted mounting plate, the sub-combination comprising a bolt having an integral embossed portion substantially corresponding in width to the slot and of less width than the bolt the side surfaces of said embossed portion being facially continuous with the top of said bolt to engage the sides of the mounting plate at said slot, and a retaining slide in connection with the said embossed portion of the bolt and of greater width than the slot in which said embossed portion is receivable, the retaining slide being spaced by said embossed portion from the bolt.

7. The sub-combination recited in claim 6 in which the retaining slide has outstanding cam flange means.

8. In a device of the character described, the combination with a pan-shaped housing having spaced side walls and a rear wall provided with a longitudinal slot, a pintle

spanning the housing from one side wall to the other, a lever having a top web and side and end portions, the side portions being mounted on the pintle, a plate spanning the slot of the housing and provided with upstanding ear means disposed between the side portions of the lever and engaged by the end portion thereof, and a bolt slidable upon the rear face of the housing and spanning the slot of the housing, said bolt having integral means extending through the housing slot and connected with said plate to receive motion therefrom, and a spring having anchorages on the housing of the bolt and biasing the bolt in opposition to the displacement thereof effected by engagement of the lever with said ear means.

9. The combination recited in claim 8 in which the bolt has the form of a channel with its web portion slidable on the rear face of the housing and flanges projecting therefrom, the said spring being housed between said flanges.

10. In a device of the character described the combination with two relatively reciprocable members, one of which is provided with a wall having a slot, and the other of which comprises spaced slides wider than the slot and spanning the slot at opposite sides of the first member, said slides being connected through the slot by a boss substantially equal to the slot in width and of a length less than that of the slot, the boss being disposed in the slot in bearing engagement with the margins of said wall of the first member at the opposite sides of the slot for guiding relative reciprocation between said members, the said boss being integral with one of said members and having laterally unbroken facial continuity with said one member, whereby to provide a finished surface bearing on said margins of said slotted wall.

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