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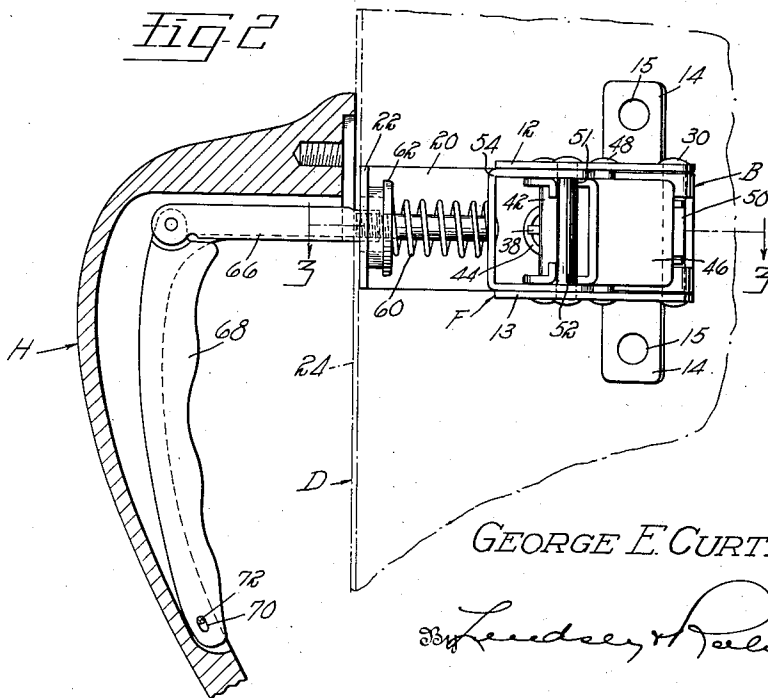
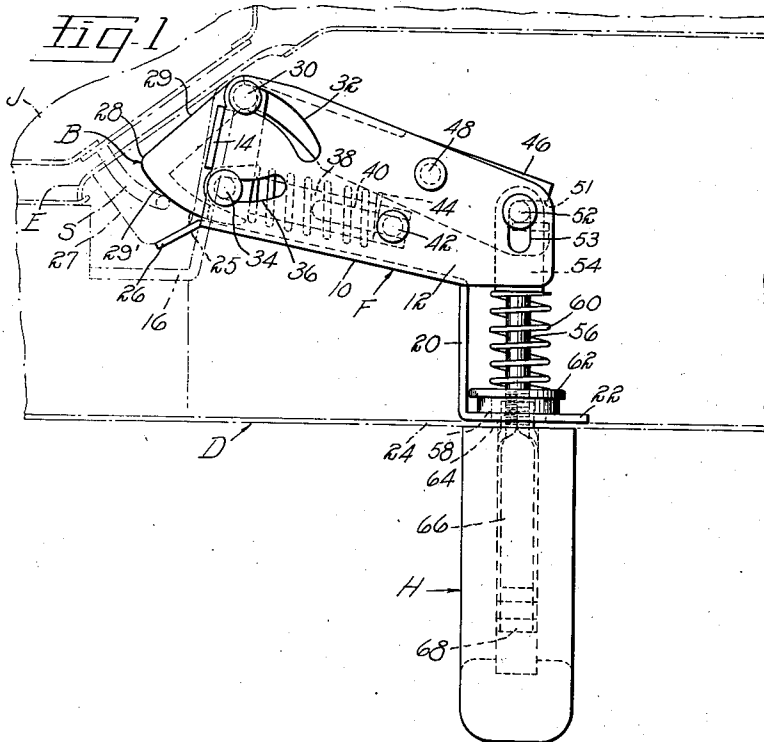
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2,293,700

REFRIGERATOR LATCH

Filed Sept. 13, 1940

2 Sheets-Sheet 1



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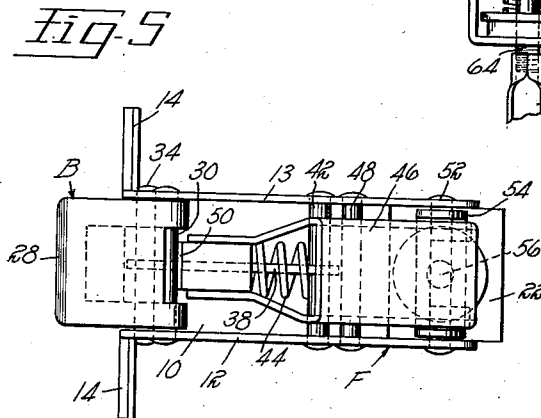
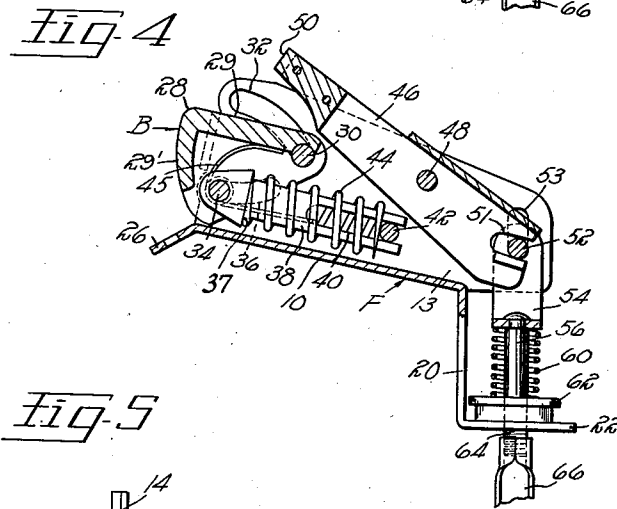
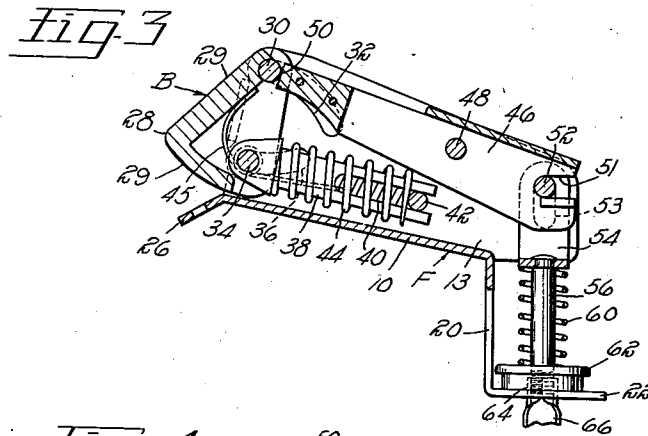
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REFRIGERATOR LATCH

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2 Sheets-Sheet 2



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REFRIGERATOR LATCH

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5 Claims. (Cl. 292—220)

The present invention relates to latches of the type used on refrigerator doors, though not limited thereto, and is primarily concerned with a latch having a double pivoted latch bolt retractable about either of two spaced pivot pins. One of the important requirements of a refrigerator latch is that it must be normally urged to latching position by a heavy spring or other strong source of force and, at the same time, must be manually retractable with a minimum of effort.

According to the present invention, the latch bolt can, by engagement with a bolt strike, be pivotally cammed about one pin against the force of a heavy spring to unlatched position and, alternatively, can be manually retracted about a second pin against the force of a relatively light spring.

It is, therefore, an object of the present invention to provide an improved latching mechanism of simple, compact, and inexpensive construction provided with the above described structure for meeting the requirements indicated.

A further object is to provide such a latch which may be easily and readily installed in a refrigerator door and thereafter simply operated.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawings:

Figure 1 is a plan view of a latch made in accordance with the present invention properly mounted in the refrigerator door;

Fig. 2 is an end profile view of the latch operating handle illustrated in Fig. 1;

Fig. 3 is a cross sectional view taken along line 3—3 of Fig. 2;

Fig. 4 is a view similar to Fig. 3 illustrating the latch bolt in manually retracted position; and

Fig. 5 is a rear profile view of the latch mechanism.

Referring to the drawings, there is illustrated a latch frame or casing F of substantially U-shaped cross section comprising a front wall 10 and top and bottom walls 12 and 13 respectively. A pair of supporting ears 14 extend outwardly from the walls 12 and 13 and are provided with screw openings 15 for securing the latch frame by screws (not shown) to a support 16 in the refrigerator door D.

In order to more rigidly support the frame, an L-shaped support 20 extends from the rear edge of the front wall 10 and includes a supporting lug 22 fastened to the outer wall or panel 24 of the door.

An escutcheon plate E having an opening 25

through which a latch bolt B extends is secured to a flange 26 on the forward edge of the front frame wall 10. The escutcheon E includes a recessed portion 27 for receiving and latchably engaging the bolt B with a strike and keeper S fixed to the door jamb J.

Referring to Figure 1 the latch bolt B is a substantially triangular shaped member having a forward strike engaging vertex or nose 28, a cam surface 29, and an arcuated keeper engaging surface 29'. The bolt is pivotally supported at its upper vertex on a pin 30. The ends of pin 30 are slidably and rotatably journaled in a pair of arcuated slots 32 rearwardly disposed in the walls 12 and 13 of the frame. The bolt is also pivotally journaled at the third or lower vertex on a second pin 34 similarly supported in a second pair of arcuated slots 36 disposed forwardly from slots 32 in the walls 12 and 13. As shown in Figure 1, the arcuated slots 32 and 36 curve towards one another, slots 32 having a common radius about the axis of pin 34, and slots 36 a like radius about pin 30.

Pivotally supported centrally on the pin 34 is one end of a link 38, the other end of which is provided with a slot 40 for reciprocally supporting the link on a stud 42 secured between the frame walls 12 and 13. A heavy spring 44 surrounds the link and is compressed between the pin 42 and a shoulder 37 adjacent the forward end of the link 38 whereby the pin is normally urged forwardly in the arcuated slots 36. A light spring 45 surrounds the pin 34 and is compressed between the bolt and the latch frame so as to normally force the bolt in a counterclockwise direction about pin 34 and to thereby force the pin 30 forwardly in the arcuated journaling slots 32. To normally prevent rotation of the bolt about the second pin 34, there is provided a lever 46 pivotally supported in the frame on a stud 48. The lever 46 is provided at the forward end with a stop 50 for releasably securing the pin 30 forwardly in the slots 32 and is provided at the rear end with a pair of notches 51.

In order to rotate the lever 46 and provide for manual retraction of the bolt about pin 34 against the force of the light spring 45 a shaft 52 is operably retained in the lever notches 51 by slidably securing the ends of the shaft in a pair of oppositely disposed elongated slots 53 in the frame. To retract the shaft 52 and rotate lever 46 as illustrated in Figs. 3 and 4, a yoke 54 is pivotally supported centrally on the shaft. A rod 56 is secured to the yoke and extends through a hole 58 in the lug 22 and door panel 24 towards the door handle H. A light spring 60 is compressed between the yoke 54 and a washer 62 so that the latch lever 46 is normally urged in a counterclockwise direction to the position wherein it abuts the pin 30 and prevents pivotal movement of the bolt about pin 34. The other end of the

rod is secured by screw threads 64 in one end of a turnbuckle or adjustment link 66. The adjustment link is pivotally secured to the free end of a manually operable bolt retracting lever 68 and provides for adjusting the position of the retracting lever relative to the handle H when the latch is installed. A slot 70 in the lever 68 is pivotally secured to the handle on a pin 72.

In operation, assuming the refrigerator door to be open pin 30 will have been forced by the light spring 45 to its forwardmost position in the slots 32 and will be retained thereat by the lever 46. Upon swinging the door to closed position, the combination strike and keeper S engages the camming surface 29 and pivotally cams the latch bolt rearwardly about the pin 30 whereupon pin 34 is forced rearwardly in the slots 36. When the bolt nose 28 clears the strike, the spring 44 forces the bolt forward to latchably engage the surface 29' and the strike S.

Referring to Fig. 2, to open the door it is merely necessary to pull on the lever 68 of the handle H. The lever 68 pivots about the pin 72 retracting the rod 56 and yoke 54 and rotating lever 46 thereby moving the stop 50 out of abutment with the pin 30. The pull on the handle H causes the strike S to rotate the bolt B about the pin 34 against the force of the light spring 45 to the position illustrated in Fig. 4. When the handle H is released the bolt B is returned to latching position by the light spring 45, and the lever 46 returned by the light spring 60 to the position illustrated in Fig. 3.

There is thus provided a refrigerator latch including a heavy spring for pivotally forcing the bolt about one pin to latching position and means for manually retracting the bolt about a second pin without exerting the force necessary to retract the bolt against the heavy spring.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim as my invention:

1. A refrigerator latch including a frame, a latch bolt pivotally supported about both of two spaced pins, said frame operably supporting said pins for transverse movement relative to said frame, a light spring constantly urging the bolt to latching position about the first of said pins, a heavy spring constantly urging the bolt to latching position about the second pin, movable abutment means preventing movement of the first pin from latching position whereby the bolt may be pivoted to unlatched position about said first pin against the action of said heavy spring, and manually operable means for actuating said abutment means to permit movement of the first pin and pivotal movement of the latch bolt to unlatched position about the second pin against the action of the light spring

2. In a refrigerator latch including a frame, a pivot pin slidably and rotatably journaled in a pair of arcuated slots in the frame, a latch bolt pivotally supported on the pivot pin and latch-

ably engageable with a keeper, a second pivot pin spaced from the first pivot pin and similarly journaled in a second pair of arcuated slots in the frame, said second pin pivotally supporting the latch bolt, a light spring continually forcing the first pin forwardly to latching position in the first pair of arcuated slots, a heavy spring for forcing the second pin forwardly to latching position in the second pair of arcuated slots, movable abutment means for securing the first pin in latching position and thereby preventing pivotal movement of the bolt to unlatched position about the second pin, resilient means for normally forcing said abutment means to securing position and manually operable means for overcoming said resilient means and releasing the first pin from the restraint of said abutment so as to allow the latch keeper to pivot the bolt to unlatched position about the second pin.

3. A refrigerator latch including a latch bolt having two strike engaging surfaces, a pair of spaced pins upon which said bolt is pivotally mounted whereby it may pivot about one pin when one surface is struck and the other pin when the other surface is struck, means slidably mounting each of said pins for transverse movement at right angles to their axes, abutment means and means normally engaging and holding one of said pins in fixed position whereby when one surface is struck the bolt will pivot about said pin, means resiliently holding the other pin against sliding movement, means for disengaging and releasing said abutment means and first pin whereby when the other surface is struck said bolt may pivot about the resiliently held pin, and resilient means continually urging said bolt to return to normal position.

4. A refrigerator latch mountable on a door and including a latch bolt having two strike engaging surfaces engageable with a strike mounted on the door jamb, a pair of spaced pins upon which said bolt is pivotally mounted whereby the bolt may be pivotally retracted about one pin when a force is impressed upon one surface and is pivotally retracted about the other pin when a force is impressed on the other surface, means operably mounting each of said pins, a heavy spring continually urging said bolt to pivot to latching position about said second pin, a light spring continually urging the bolt to pivot to latching position about the first pin, movable abutment means normally preventing pivotal retraction of the bolt about the first pin, manually operable means for moving said abutment from normal position, and spring means continually urging said abutment to normal position.

5. A refrigerator latch including a frame, a latch bolt pivotally supported about both of two spaced pins, said frame having spaced walls movably supporting each of said pins for transverse movement relative to said frame in oppositely disposed slotted guideways, each pair of guideways being concentrically curved relative to the pin supported in the opposite guideway, movable abutment means engaging and preventing transverse movement of one of said pins and permitting pivotal movement of the bolt about said pin, manually operable means for disengaging said movable abutment, means to permit transverse movement of said first pin and pivotal movement of the bolt about the second pin, and a spring resiliently opposing movement of said first pin when said abutment is disengaged therefrom.