Sept. 5, 1933. G. E. DE VOE 1,925,308

REFRIGERATOR LATCH

Filed July 29, 1932 2 Sheets-Sheet 1

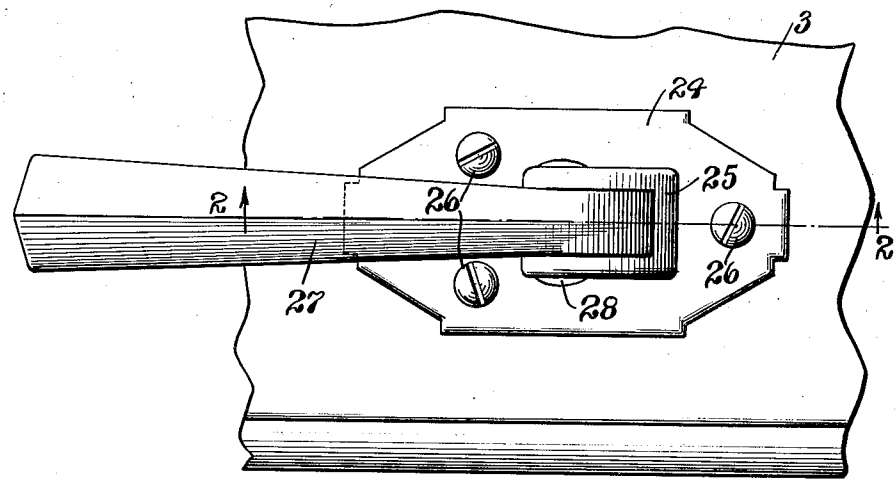


Fig. 1.

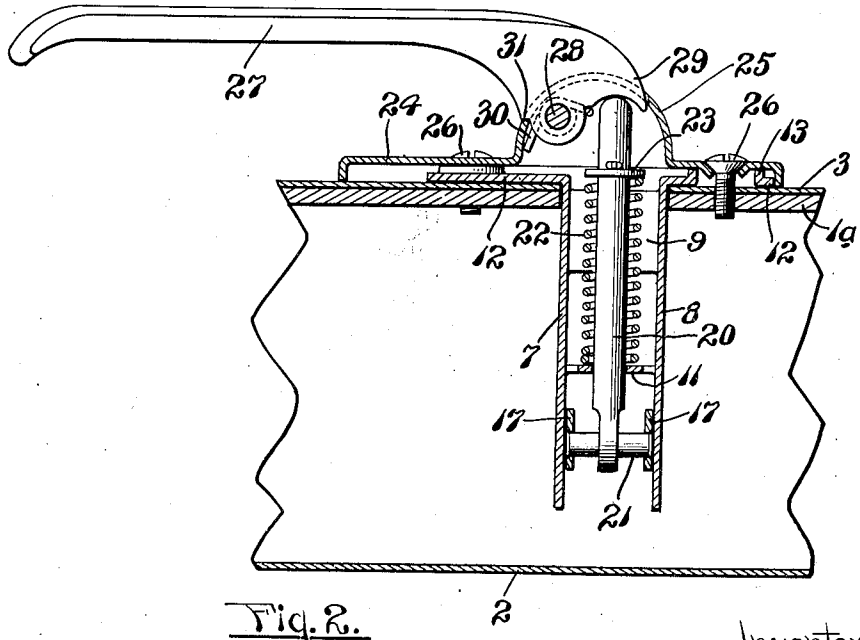


Fig. 2.

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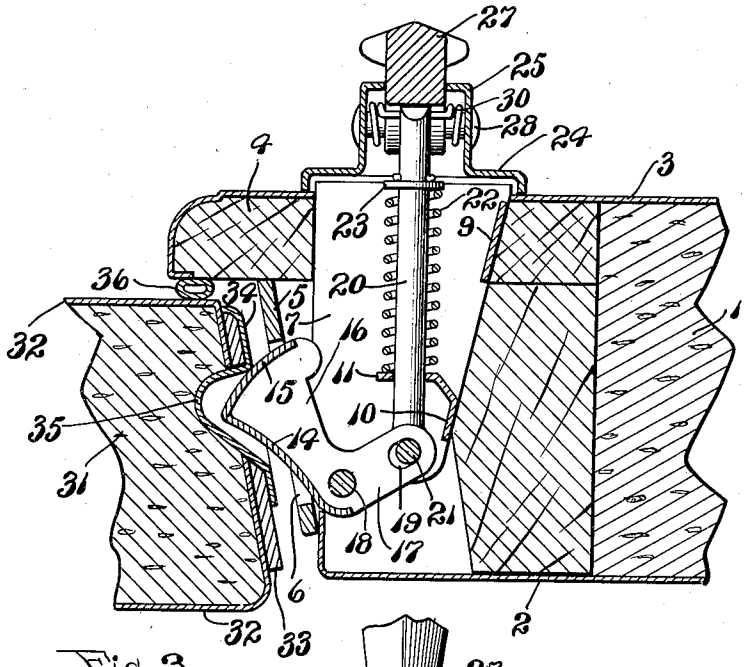


Fig. 3.

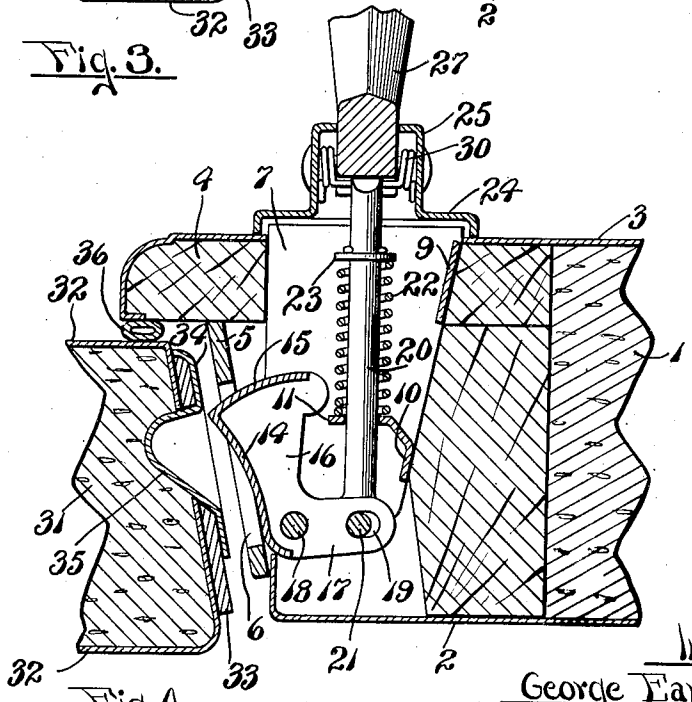


Fig. 4.

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UNITED STATES PATENT OFFICE

1,925,308

REFRIGERATOR LATCH

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Application July 29, 1932. Serial No. 625,645

4 Claims. (Cl. 292—221)

This invention relates to a refrigerator latch and is particularly concerned with a latch which is concealed between the edge of the door and the adjacent edge of the casing, the only parts of the latch exposed when the door is closed consisting of the operating handle and its mounting.

It is a primary object and purpose of the present invention to produce a very simply constructed and economical concealed latch for use on refrigerators, by means of which a downwardly extending operating handle, or drop handle so-called may be used for actuating the latch, and one which is very easily installed and mounted on a refrigerator.

The invention consists in many novel arrangements and combinations of parts cooperating together to effect the production of a simple, durable, practical and serviceable refrigerator latch. An understanding of the invention may be had from the following description, taken in connection with the accompanying drawings, in which,

Fig. 1 is an elevation showing so much of the latch as appears at the outer side of the door.

Fig. 2 is a section substantially on the plane of line 2—2 of Fig. 1.

Fig. 3 is a horizontal section through an edge portion of a refrigerator door and adjacent portion of the casing, illustrating the position of the latch parts when the door is held closed, and

Fig. 4 is a section similar to Fig. 3, showing the position of the parts when the handle has been operated to retract the latch bolt.

Like reference characters refer to like parts in the different figures of the drawings.

The door of the refrigerator may be of conventional construction having an inner body or core 1 of suitable heat insulating material covered with sheet metal, having a lining 2 at its inner side and an outer covering 3, the door being provided with the usual outwardly extending riser flange 4 around its edges to extend over the adjacent portions of the refrigerator casing around the door opening. At the free edge of the door, the opposite edge having a hinge connection to the refrigerator casing, is a plate 5 having an opening 6 through it. The plate is inclined at an acute angle to the plane of the face of the door as shown.

In the latch construction a supporting member is provided, preferably made of sheet metal, having spaced apart sides 7 and 8 connected at one edge by a cross member 9 integral therewith, and also by a cross member 10 located inwardly a short distance from the member 9; and the metal between the parts 9 and 10 is struck and bent inwardly to lie between the sides 7 and 8 to provide a supporting ledge 11 through which an opening is made. The outer edges of the sides 7 and 8 are turned at right angles, as indicated at 12, to lie against the outer face 3 of the door and said parts 12 are provided with openings therethrough having short circular sleeves 13 pressed outwardly therefrom as shown in Fig. 2.

A latching bolt is located between the inner end portions of the sides 7 and 8 of the support. The bolt is preferably of sheet metal and has a cam outer side 14 and a rounded cam end 15 from which spaced apart sides 16 extend inwardly. These are extended into spaced apart arms 17 at an angle approximating a right angle to the sides 16. The latch bolt is pivoted on and between the sides 7 and 8 on a pivot pin 18 which extends through the same at the juncture of the parts 16 and 17 as shown in Figs. 3 and 4. The inner ends of the arms 17 have somewhat elongated slots 19 cut therein.

A push rod 20 passes through the opening in the ledge 11 previously described and at its inner end has a pin 21 passing therethrough which seats at its ends in the slots 19. A coiled spring 22 is located around the rod 20 between said ledge 11 and a washer 23 located on and around rod 20 and held from outward movement thereon by a cotter pin as shown in Figs. 3 and 4.

This latch structure is adapted to be inserted through a suitable opening cut in the outer face and adjacent the free vertical edge of the door, the parts 12 coming against the outer face of the door and the outer portion of the latch bolt passing through the opening 6 in the plate 5. After being thus inserted the latch is covered by a covering housing which carries the operating handle.

The covered housing is made of sheet metal and is stamped to provide a flat flange portion 24 from which an outwardly pressed or embossed housing 25 extends, the flanges 24 at their edges having an inturned continuous lip. These flanges come against the outer ends of the circular sleeves 13 and space the housing at its edges a very slight distance from the metal covering 3 at the outer side of the door. Screws 26 pass through the flange 24 and through the openings surrounded by the sleeves 13 and thread into the door and into a metal backing plate 1a (Fig. 2) which may lie underneath the outer covering metal 3 of the door, thereby permanently securing the housing and the operating handle which it carries in place.

The housing 25 is cut away at its upper portion

for association of an operating handle therewith which has one end portion partially entered into the housing. The handle is pivoted on a pivot pin 28 extended between the sides of the housing 25 and has a finger 29 provided with a concaved recess at its inner side in which the outer end of the rod 20 has a bearing. A coiled spring 30, located within the housing 25 and around the pivot pin 28 serves to normally move the handle so that a shoulder 31 thereon engages with the housing 25 at one end of the opening made therethrough for reception of the handle.

Normally the spring 22 under compression serves to move rod 20 outwardly and keep it in engagement with the adjacent end of the handle 27 and turn the latch bolt so that its free end portion passes through the opening 6 in the plate 5 to engage with the keeper on the adjacent side of the casing. The refrigerator casing may be of conventional construction having an interior body 31 of heat insulating material covered and lined with metal 32, and with a metal plate 33 parallel to the plate 5 and inclined the same, secured to the casing at the edge of the door opening where the latch is to engage. The plate 33 has an opening therein and associated with the plate is a keeper 35 of sheet metal provided with a recessed portion 35 which passes through said opening and enters a recessed portion of the adjacent part of the body 31 of the casing.

With the door closed the outer end of the latch bolt partially enters the recessed part 35 of the keeper and the cam outer end at 15, riding against the keeper, has a tendency to draw the door tightly closed and compress a yieldable bumper 36 between the riser flange of the door and the adjacent part of the casing. Any attempt to open the door without grasping the handle 27 serves to more firmly wedge the latch bolt against the keeper. Should any articles within the refrigerator fall against the inner side of the door the same will not open to any extent. The door is opened by grasping the handle 27 and pulling outwardly thereon. This moves the rod 20 inwardly and turns the latch bolt about the pivot pin 18, withdrawing the projecting end of the latch bolt from the keeper and freeing the door for opening, which will occur automatically by reason of the outward pull on the handle, the opening of the door following as soon as the latch has disengaged from the keeper.

With the door open the same may be readily closed by moving the door to closed position, whereupon the cam side 14 of the latch bolt rides over the rounded outer end portion of the keeper 34 until the keeper recess 35 is reached. Inasmuch as the handle 27 has no positive connection with the rod 23, the handle will not move with the latch bolt as the door is being closed but will be maintained in its normal position by spring 30.

The construction described is of a simple and practical form, economically manufactured, easily and quickly installed and has proved very satisfactory in use. The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. In a latch structure, a unit integral support having spaced apart connected sides, a supporting ledge carried by said support between said sides, a rod extending through said ledge and guided thereby, spring means around said rod bearing against the ledge at one end, means on the rod bearing against said spring means at the other end thereof, a latch bolt pivotally mounted on said support between the sides thereof and adjacent the inner end of the support and to one side of the inner end of said rod, said latch bolt including spaced apart arms extending from its pivot one to either side of the inner end of the rod, and a pin passing through the inner end of said rod and said arms, as specified.

2. In a construction of the class described, a door, a latch structure housed within the door adjacent a vertical edge thereof comprising, a support having spaced apart sides, a latch bolt pivotally mounted between said sides adjacent the inner ends thereof, a guiding ledge carried by said support between its sides, a rod passing through said ledge pivotally connected at its inner end with said latch bolt, and spring means bearing against said ledge and operatively connected with said rod to move the rod outwardly, as specified.

3. A latch construction comprising, a support having spaced apart connected sides, a transverse supporting ledge between said sides and between the ends of the support, a rod passing through said ledge, a coiled spring around said rod bearing at one end against the ledge, means on the rod against which the other end of the spring bears, a latch bolt pivotally mounted on and lying between between the sides of said support at the inner end portions thereof, said latch bolt comprising arms extending between the pivot of the bolt and the inner end of said rod, said arms being continued substantially at right angles from said pivot and having a cam side and a cam end between the free end portion of the combinations of said arms, and a pivot extending through the inner end of said rod and the adjacent ends of said arms.

4. In a latch construction of the class described, adapted to be received within an opening leading from one edge of the door and one side thereof, having a latch bolt and operating mechanism therefor including an operating rod adapted to be axially moved to operate the latch bolt, the combination of, a support having sides, each of said sides of said support at its outer end being provided with an extension turned at right angles to lie against the outer side of the door, said extensions having openings therethrough and short annular sleeves surrounding said openings extending outwardly, a covering housing having lateral flanges located against the outer side of the door, said flanges bearing against the outer ends of said sleeves, screws passing through the flanges and through said sleeves into said door, and a handle pivotally mounted on said housing having an end thereof engaged with the outer end of said rod.

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