Oct. 10, 1933. G. E. DE VOE 1,929,775

REFRIGERATOR LATCH

Filed July 6, 1932 2 Sheets-Sheet 1

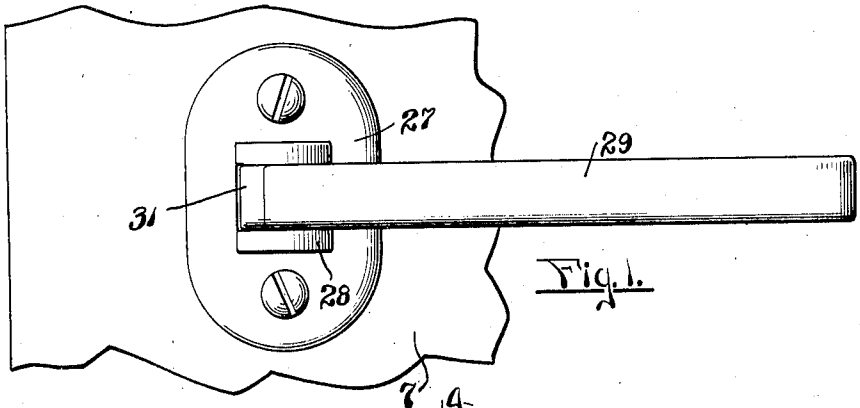



Fig. 1.

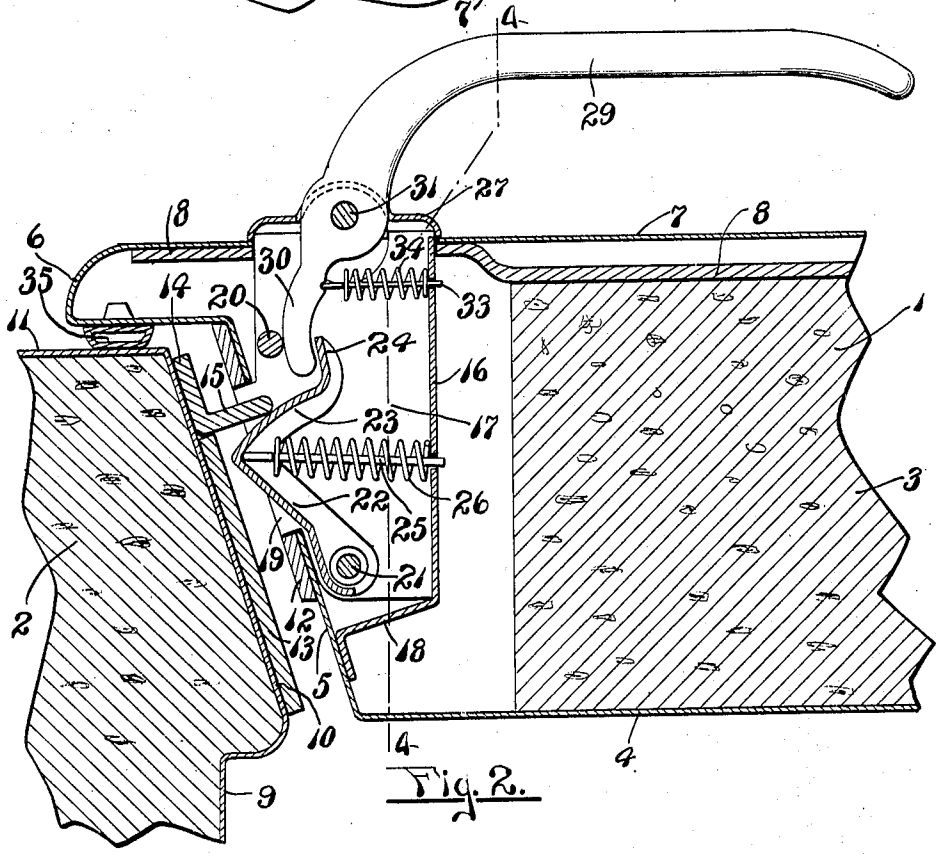



Fig. 2.

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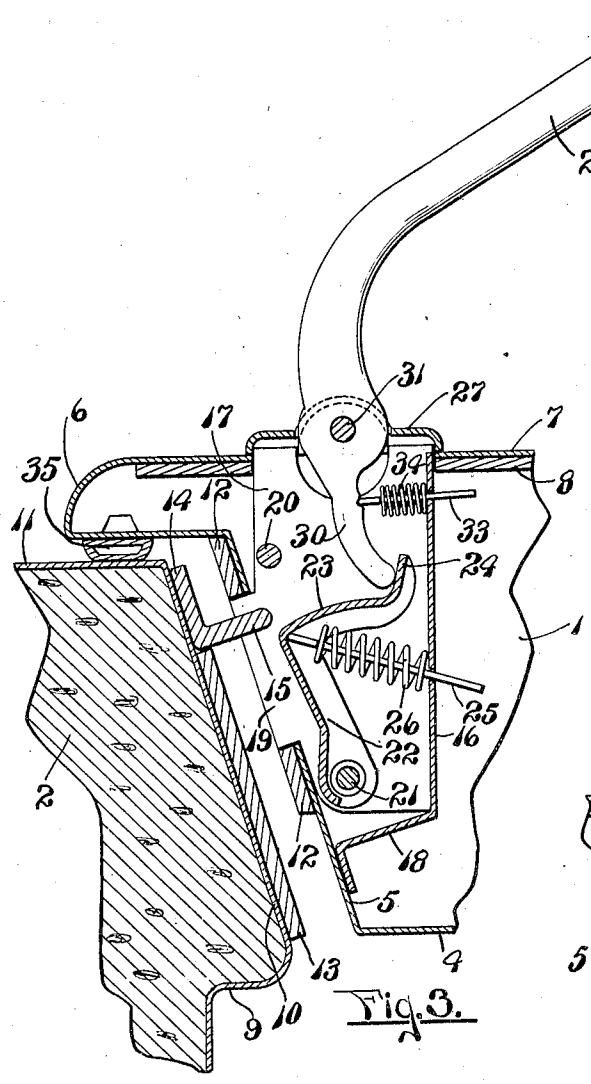



Fig. 3.

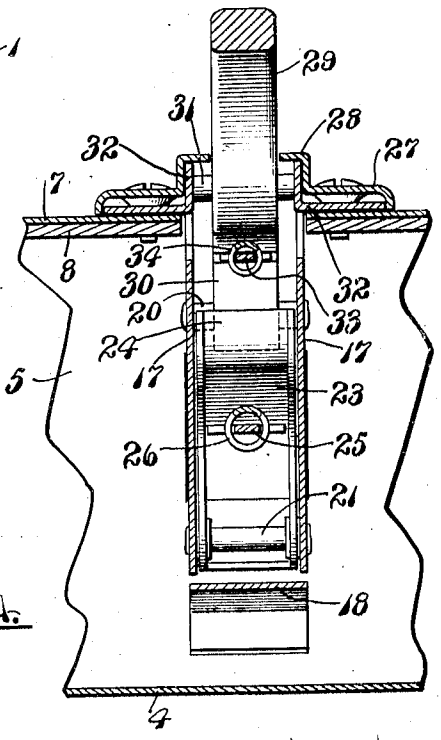



Fig. 4.

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# UNITED STATES PATENT OFFICE

1,929,775

## REFRIGERATOR LATCH

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Application July 6, 1932. Serial No. 620,995

7 Claims. (Cl. 292—226)

This invention relates to refrigerator latches and is more particularly concerned with a so-called concealed latch wherein the only part exposed at the outside of the door of a refrigerator is the handle which is used to operate the latch to disengage it from its keeper.

It is a primary object and purpose of the present invention to provide a simple, practical, economical latch structure, especially adapted for refrigerator use, with which a refrigerator door may be held in securely closed position and which is easily operable for releasing purposes to open the door; and to provide a better and more practical construction of concealed refrigerator latch than has heretofore been produced.

An understanding of the invention may be had from the following description, taken in connection with the accompanying drawings, in which,

Fig. 1 is a fragmentary elevation illustrating the way the latch appears when viewed from outside a door, on which it is mounted.

Fig. 2 is a fragmentary horizontal section through the latch structure showing the same applied to a door and engaged with a keeper on a door casing and with the latch in its operative door closing position.

Fig. 3 is a similar section showing the handle operated to disengage the latch from the keeper, and

Fig. 4 is a fragmentary vertical section taken lengthwise of the latch and substantially on the plane of line 4—4 of Fig. 2.

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

The door 1 is adapted to close an opening to an interior compartment of a refrigerator, the casing 2 of the refrigerator being fragmentarily disclosed in Figs. 2 and 3 with an opening in which the door is received. The door may include an inner core 3 of suitable heat insulation material encased in metal, there being an inner lining 4, an inclined end lining section 5, an overlapping flange 6 to overlap the adjacent edges of the front of the casing, and a front 7 as shown in Figs. 2 and 3; and within the front 7 a reinforcing plate 8 of metal may be located. This is a conventional construction of a refrigerator door particularly in refrigerators of the metal type wherein the outer surfaces are of metal usually finished with enamel, porcelain or the like.

The casing 2 also may have a suitable heat insulating body, lined and covered with sheet metal, the inner side 9 of the metal being continuous with an inclined section 10 which parallels the end 5 of the door, and an outer face 11 as shown.

A metal plate 12 is secured at the outer side of the inclined end 5 of the door and a similar plate 13 at the inner side of the inclined section 10 which is directly opposed to the end 5 of the door. A keeper is attached to a vertical side of the casing and is of angular form having legs 14 and 15 as shown, the leg 15 extending toward the door and through an opening which is made in the plate 12 and the end section 5.

The latch has a supporting body of sheet metal comprising a back 16 from which parallel sides 17 are bent at right angles, the said sides being spaced apart from each other, and at the inner end of the back 16 an end section 18 is bent toward the inclined metal lining section 5 at the end of the door against which it may bear and to which it may be secured. The outer edges of the sides 17 are provided with lugs 19 which insert through the opening into which the keeper flange 15 passes. A rod 20 is carried by and extends between the sides 17 of this support and is located a short distance outward from the end of the keeper flange 15 when the door is closed, as in Fig. 2.

On a pivot pin or rod 21 adjacent the inner ends of the sides 17 a latching bolt is pivotally mounted. It comprises an arm 22 mounted at one end on the pivot rod 21 and normally extending outward through the opening in the plate 12 and the part 5, from which a cam arm 23 is bent inwardly substantially at right angles to the arm 22. The free end of the arm 23 terminates in an outwardly extending finger 24. This latching bolt is normally moved to and held in the position shown in Fig. 2. A T-shaped rod 25 bears at its larger end against the latching bolt at the corner or elbow formed by the juncture of the arms 22 and 23 and at its opposite end passes freely through an opening in the back 16 of the latch support; and a coiled spring 26 is located around the bar 25 between its head and the inner side of the back 16.

At the outer side of the door and covering the support for the latching bolt a sheet metal covering plate or housing 27 is located, having an outwardly pressed central portion 28 with an opening therethrough for the passage of the inner end of the operating handle 29 which is used to move the latching bolt to disengaged position. The handle 29 at its inner end has a finger 30 which normally lies between the rod 20 and the

finger 24 of the latching bolt (Fig. 2). The handle is pivotally mounted on a pivot rod 31 the ends of which are carried by semi-circular portions 32 located within the housing 27 and its embossed or raised portion 28 (see Fig. 4) and held in place by the securing screws which pass through the housing 27 in attaching the same to the door, as shown in Fig. 4. The portions 32, see Figs. 3 and 4, are integrally formed with the side plates 17, the side plates being bent outwardly at right angles and lying flush against the outer face of the front 7. A second smaller and lighter T-shaped rod 33 bears at its enlarged end against the finger 30, and a light coiled spring 34 around rod 33 bears at one end against the larger head of the bar and at the other end against the back 16, the same as the spring 26.

If the door is open, on closing the same the inclined outer side of the arm 22 rides against the keeper flange 15 whereby the latching bolt is turned in a clockwise direction, compressing spring 25 until the corner or elbow of the bolt passes by the flange 15 whereupon the cam outer face of arm 23 is pressed by the spring 26 against the inner side of the keeper flange 15 thereby drawing the door to tightly closed position. Between the flange 6 and the adjacent outer side of the refrigerator casing a suitable compressible member 35, preferably of rubber, is located which is compressed by action of the latch spring and a very snug and air tight closure of the door is provided.

To open the door it is necessary merely to grasp the handle 29 and pull the same outwardly as in Fig. 3. The finger 30 of the handle engages the finger 24 of the latching dog, turns the bolt in a clockwise direction or to the position shown in Fig. 3, thereby releasing the latching bolt completely from the keeper flange 15; and the outward pull given to the handle 29 serves to automatically pull the door open as soon as the elbow or corner of the latching dog is freed from engagement with the keeper flange 15.

In order that the handle 29 shall not be loose when the door is latched the spring 34 is provided to force the finger 30 with a light pressure dependent upon the strength of the spring 34 against the rod 20 (Fig. 2). This will hold the handle from any loose or aimless movement in case the finger 24 of the latching bolt does not follow far enough to be at all times engaged with the finger 30 on the handle.

The construction described is simple and practical. An opening is cut in the plate 8 and in the outer cover 7 for the insertion of the latch which may be readily installed in place and the outer end thereof covered by the housing 27. The only part appearing at the outside of the refrigerator is what is shown in Fig. 1, the entire latch otherwise being completely concealed when the door is closed.

The invention has proved very practical in service. It is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within the scope thereof.

I claim:

1. A unit latch construction comprising a supporting body having a back and spaced apart parallel sides, a latching bolt pivotally mounted between said sides adjacent one end thereof, spring means between the bolt and the back of the support normally pressing the latching bolt away from the back, and a handle pivotally mounted at the end of the support having an inwardly extending finger located in front of the finger on said latching bolt as specified.

2. A construction containing the elements in combination defined in claim 1, combined with a stop extending between the sides of said support in front of the finger on said handle, and spring means acting on said finger of the handle to normally hold the same in engagement with said stop.

3. The combination with a latch supporting member having an outer side and a vertical edge located in a vertical plane at an acute angle to the plane of the outer side, said vertical edge having an opening therethrough, and said outer side having an opening therethrough, a latch inserted through the second mentioned opening comprising, a body having a back and spaced apart parallel sides, lugs at the free edges of said sides entering the opening at the vertical edge of the latch supporting member, a latching element pivotally mounted at one end between the inner ends of the sides of said support having an arm extending from the pivot into and through said open end, a second arm located substantially at right angles to the first arm extending therefrom back through said opening to between the sides of the support, spring means located between said latching dog and the back of the support for yieldingly holding the latching element in such position, a handle pivotally mounted at the outer end of said support and having an inwardly extending finger, and means on the latching element engaged by said finger whereby on turning the handle the latching element is moved to retracted position.

4. In combination with a latch supporting member, a latch construction comprising, a supporting unit having a back and spaced apart sides, each of said sides having a lug extending outwardly through an opening in the latch supporting member, a latching bolt pivotally mounted between the sides of the supporting body, and extending outwardly through said opening in the latch supporting member when in extended position whereby the latching bolt has parallel, spaced apart, unitary guide members to bear between, spring means between the bolt and the back of the support normally pressing the latch away from the back, and a handle pivotally mounted between the sides of said support having means to operate the bolt for the purpose described.

5. A latch construction for a door comprising a supporting body having a back and spaced apart parallel sides, a latching bolt pivotally mounted between said sides adjacent one end thereof, spring means between the bolt and the back of the support normally pressing the latch bolt away from the back, said supporting body extending through an opening in the front of the door, said parallel sides having oppositely extending flanges to lie against and be attached to the outside of the door, said parallel sides having ears extending outwardly beyond the surface of the door, a handle pivotally mounted between said ears having means to operate said latching bolt as specified.

6. A combination of elements as set forth in claim 5 but also having additional spring means for moving the handle to inoperative position, and stop means for preventing excessive movement of the handle, said stop means permitting

separation of the handle and the latch whereby entirely free operation of the latch is had.

7. In a construction of the class described, a latch supporting member having a front portion and a downwardly extending side portion, a latch housing extending through an opening in the front portion of the latch supporting member, said latch housing having a back, bottom and spaced apart parallel sides, each of the spaced apart parallel sides having a lug extending outwardly into an opening in the side portion of the latch supporting member, each side at the upper end thereof having an outwardly extending ear to lie against the front portion of the latch supporting member, a latching bolt pivotally mounted between the said parallel sides at their lower ends, said latching bolt extending through the opening in the side portion of the latch supporting member when in extended position, spring means for yieldably holding the latching bolt in said extended position, a handle pivotally mounted at the upper end of the latch housing having means to engage the latching bolt whereby pivotal movement of the handle moves the latching bolt from extended position to retracted position, and an escutcheon mounted over the opening in the supporting member and the ears on the latch housing, means to secure the escutcheon to the supporting member, said escutcheon having an opening through which the latch handle passes.

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