

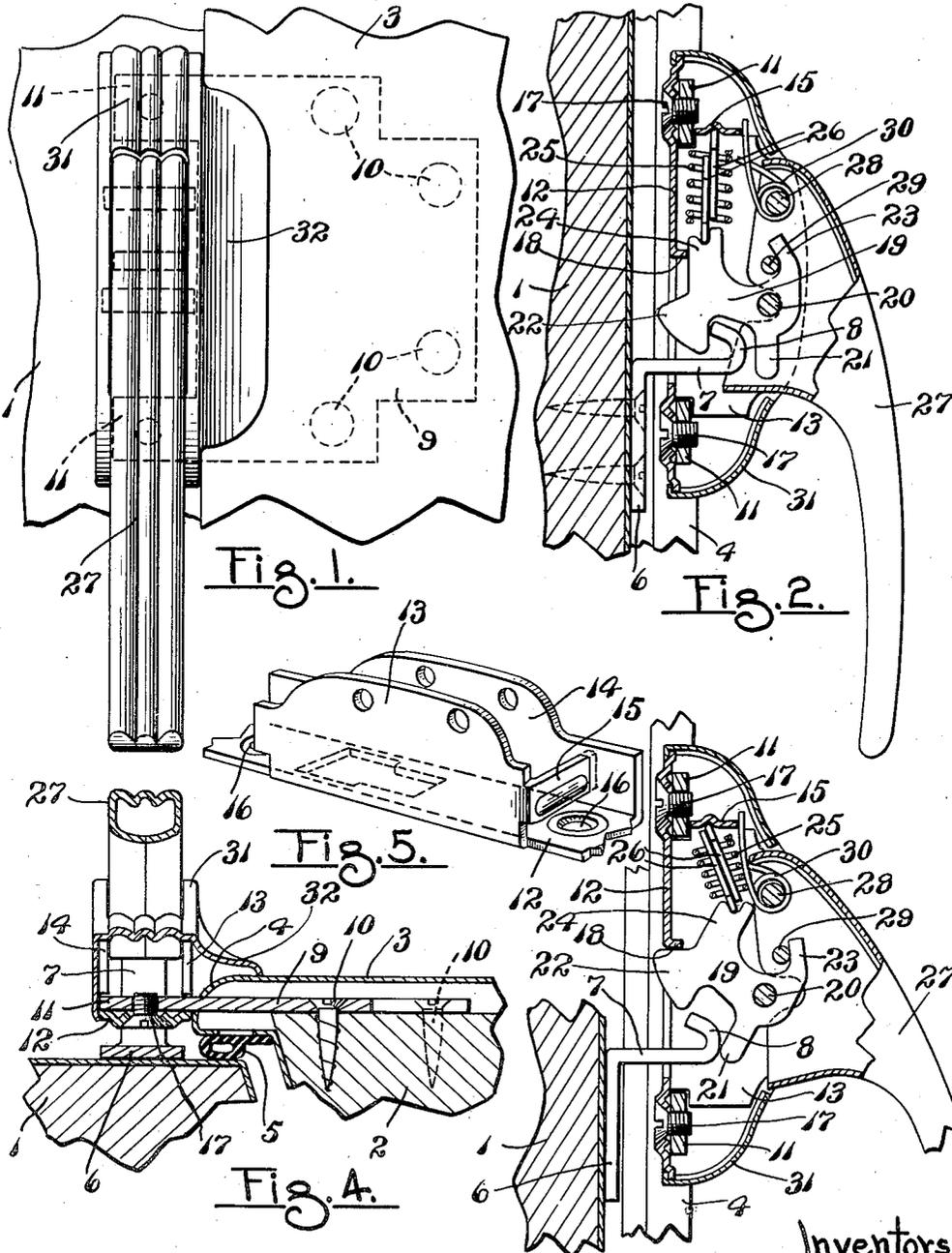
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REFRIGERATOR LATCH

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REFRIGERATOR LATCH

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This invention relates to latches which are of particular utility in connection with refrigerator doors.

Refrigerator doors are mounted for swinging movement about one vertical edge and at the opposing vertical edge are equipped with a latch mechanism including a latch and a keeper, one of which is mounted on the door and the other on the adjacent portion of the door frame of casing, which is a part of the refrigerator body. Refrigerator doors in practice have ledges at their upper and lower and free vertical edges which extend over the adjacent portions of the door frame, and as a consequence, the outer face of the refrigerator door is in a vertical plane spaced outwardly a short distance from the plane of the front side of the refrigerator body.

In the present invention it is designed that a manually operable latch, having a downwardly extending handle to be actuated to release the latch, shall be mounted on the refrigerator door at its free vertical edge and immediately beyond the same, the latch bolt coacting with a keeper on the adjacent vertical member of the door frame, the latch bolt of the latch automatically engaging with the keeper as the door is closed and the keeper being wholly covered and disguised by the latch when the door is closed.

It is a further object of the present invention to provide a latch construction which is of a very practical, durable and efficient form, and one which may be quickly and easily mounted upon the door. Many other objects and purposes, together with advantageous results coming from the structure of latch which I have invented will appear and be understood from the following description, taken in connection with the accompanying drawing, in which,

Fig. 1 is a fragmentary front elevation of a refrigerator door and the adjacent door casing, having the latch of my invention applied to the door, the door being in closed position.

Fig. 2 is a vertical section taken through the latch in the closed position of the door.

Fig. 3 is a section like that shown in Fig. 2 showing the handle operation of the latch bolt in the act of opening the door.

Fig. 4 is a transverse section showing the manner in which the latch is mounted upon the door, and

Fig. 5 is a perspective view of the inner supporting member of the latch.

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

The vertical side of the door frame of the re-

frigerator is indicated at 1, the door opening being closed by a door which has an inner framework 2, and which is usually covered by a sheet metal cover 3, the outer face of which, as well as a sheet metal covering over the remainder of the refrigerator, is many times covered with a baked porcelain enamel. The door at its free edges has an outwardly extending ledge 4 at the inner side of which is a cushion member 5, usually of rubber which, when the door is closed (see Fig. 4), makes a tight seal against the escape of refrigerated air or the entrance of heat from the outside.

With my invention a keeper of very simple construction is permanently secured to the vertical side of the door frame. It comprises a flat base 6 from which an arm 7 is turned outwardly at right angles, the arm terminating in a hook 8 as shown in Figs. 2 and 3. The keeper is made from a single length of flat metal bent into the shape shown.

A mounting plate 9 of flat metal, upon which the latch is detachably mounted, is inserted into the door through the ledge portion 4 thereof and is secured to the inner framework 2 by means of screws 10, or in the case of an all metal door by spot welding. Beyond the adjacent edge of the ledge the plate has two spaced apart ears 11 each with a threaded opening therethrough. It is on these ears that the latch is mounted so that it is positioned beyond the edge of the ledge 4 at the free vertical edge of the door.

In the construction of the latch a supporting member is provided of sheet metal bent into channel form having a base 12 and spaced apart parallel sides 13 and 14 from the end of one of which, the side 13, an integral bar 15 is turned at right angles and extends to and passes at its end through the opening in the opposite side 14 (see Fig. 5). The base 12 has countersunk openings 16 one adjacent each end through which screws 17 pass and thread into the threaded openings in the ears 11 of the mounting plate 9 for securing the latch to said mounting plate. At the central portion of the base a short lip 18 is turned inwardly as shown in Figs. 2 and 3.

A latch bolt 19 is pivotally mounted upon a pivot pin 20 which extends between and is mounted at its ends in openings in the sides 13 and 14 of the support. The latch bolt at one side has two spaced apart fingers 21 and 22 with a recess between them and the inner finger 22 is preferably provided with a curved cam surface at its free end. At the opposite side of the latch bolt are two additional spaced apart fin-

gers 23 and 24, the finger 23 being substantially opposite the finger 21 and the finger 24 substantially opposite the finger 22. A coiled compression spring 25 is located between the bar 15 and the end of the finger 24 around two headed bars 26 which are located in side by side relation so as to slide past each other, the head of one bar bearing against the bar 15 and the head of the other bar seating in a notch in the end of the finger 24, the ends of the spring seating against the heads of the two bars 26 as shown. The effect of the spring is to hold the latch bolt against the edge of the lip 18, which serves as a stop therefor, when the force of the spring passes inside of the pivotal axis of the pivot 20 as shown in Fig. 2. When the latch bolt is turned to the other position illustrated in Fig. 3 and the line of force of the spring has passed across the pivotal axis of the pin 20, the finger 22 of the latch bolt is brought against the side of the lip 18 which serves as a stop therefor.

A handle 27 is pivoted on a pin 28 which is spaced from pin 20 and likewise extends between and is held at its ends in openings in the sides 13 and 14 of the support. The upper end of the handle passes between the sides 13 and 14 of the support described. Between the opposed sides of the handle at its upper end is a third pin 29 which enters the recess between the fingers 23 and 24 so as to engage against the inner side of the finger 23. An outward pull on the lower end of the handle 27 causes the pin 29 to engage with the finger 23 and turn the latch bolt in a clockwise direction from the position shown in Fig. 2 to that shown in Fig. 3. In the position of the bolt shown in Fig. 2 the hook 8 of the keeper is located in the recess between the fingers 21 and 22 of the latching bolt and the end of the hook bears against the outer side of the finger 22, thereby holding the door in latched position. When the handle 27 is pulled outwardly at its lower end the latch bolt is turned so as to disengage from the keeper hook 8 permitting the door to be readily opened. The latch bolt will remain in the position shown in Fig. 3 all of the time that the door is in open position. When the door is closed the finger 21 is brought against the outer end of the hook 8 of the keeper thereby automatically turning the latch bolt in a reverse or counterclockwise direction, and as soon as the line of force of the spring 27 passes to the inner side of the axis of the pivot 20 the spring acts to turn the latch bolt to the position shown in Fig. 2 thereby automatically and securely engaging the latch bolt and keeper together.

A light spring 30 is coiled around the pivot pin 28, having one arm bearing against the upper end of the handle 27 and the other bearing against the edge of the bar 15. This spring, in addition to the force of gravity, tends to return the handle 27 from the position shown in Fig. 3 to that shown in Fig. 2 when the handle is released after the door has been opened.

An ornamental housing 31 of sheet metal is used to cover the inner support described and to present a pleasing and attractive appearance. At the side of the housing nearest to the door it may be provided with an outwardly extending shroud 32 to extend partly over the adjacent ledge 4 of the door. In some instances the shroud is not used and whether or not it is used is a matter of choice.

It is evident with this construction that when

the door is closed the keeper is covered by the latch and cannot be seen. The mounting plate 9 is fastened to the door while the door is in the process of fabrication. After the door has been hingedly mounted on the refrigerator the keeper can be properly positioned on the door casing with reference to the projecting ears 11 of the mounting plate. Then the door may be swung to open or partly open position and the latch positioned in place, the screws 17 applied to secure the latch to the mounting plate and the assembly is then complete.

The construction described is of a very practical and efficient type, is economical to produce, attractive in appearance and has proved exceptionally 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.

We claim:

1. In a refrigerator door assembly having a door and a door casing therefor, and a keeper secured to the door casing beyond the edge of the door, the combination of a mounting plate secured to the door having spaced apart ears extending beyond the edge of the door, a latch including a support having a base and parallel spaced apart sides extending at right angles from the base, a latch bolt pivotally mounted on and located between the sides of the support and adapted to releasably engage the keeper when the door is closed, and screws passing through said base of the support and threading into said ears of the mounting plate, as specified.
2. In a refrigerator door mounting having a door and a door casing therefor and a keeper secured to the door, a plate secured to said door having spaced apart ears extending beyond the edge of the door and in a plane parallel to the front of the door, a latch detachably connected to said ears so as to come over and cover the keeper when the door is closed, means included in the latch to releasably engage with the keeper when the door is closed, and manually operable means for releasing said engaging means from the keeper.
3. In a refrigerator door assembly having a door and a door casing therefor and a keeper secured to the door casing having an outwardly extending section terminating in a return bent hook, the combination of a latch construction comprising, a support having a base and spaced parallel sides extending at right angles from the base, said base mounted on the door and positioned beyond the edge thereof so as to be directly over and cover the keeper when the door is closed, a latch bolt pivotally mounted on and between the sides of the support, said latch bolt having two pairs of fingers, each pair being spaced one from the other with a recess between them, and said pairs of fingers being located at opposite sides of the bolt, a handle pivotally mounted at one end in the sides of the support, means on said handle for engaging one of a pair of fingers, a spring extending between the base and the other finger of the same pair tending to hold the latch bolt in locked or unlocked position, the hook of the said keeper being positioned within the recess between the other pair of fingers and engaging against the inner face of one of said fingers when the latch bolt is in locked position.

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