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REFRIGERATOR DOOR FASTENER

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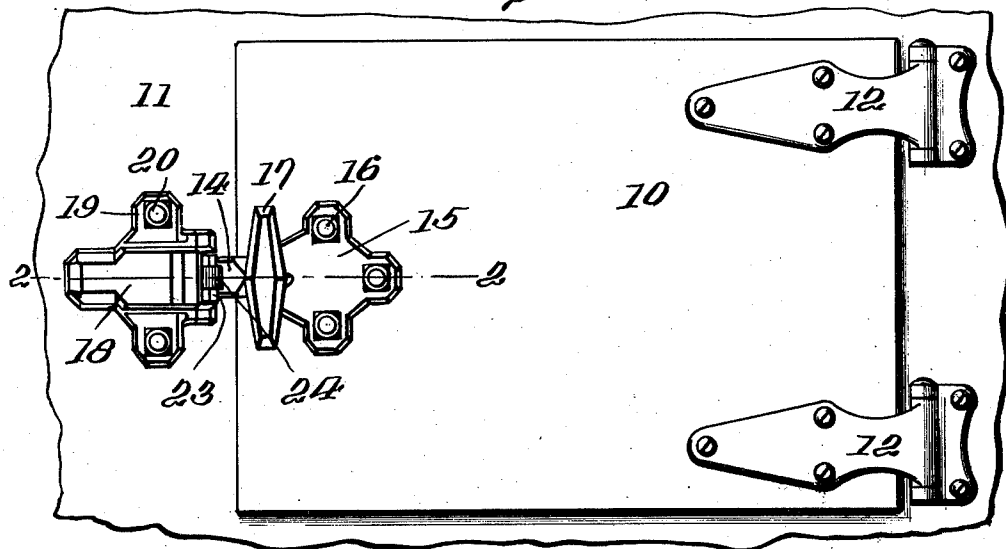
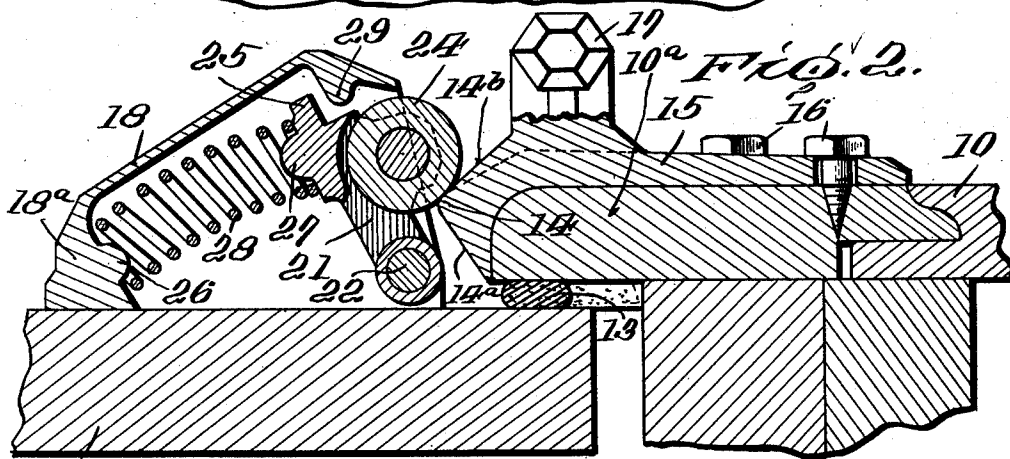
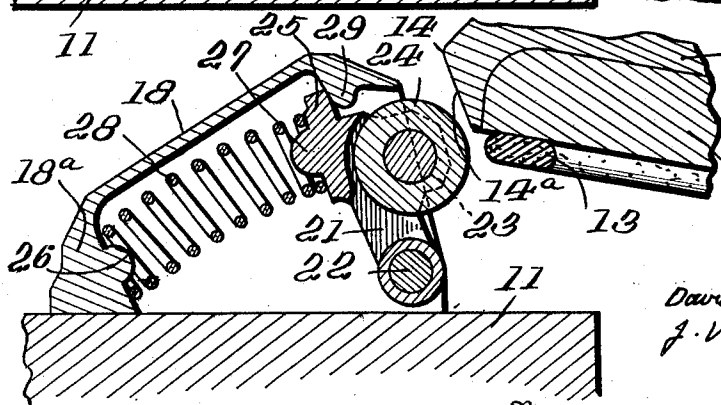


Fig. 2.



Πρόβ.



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REFRIGERATOR DOOR FASTENER

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1 Claim. (Cl. 292—79)

The present invention relates to new and useful improvements in door fasteners and more particularly to improvements in fasteners for refrigerator doors.

5 An object of the invention is to provide a refrigerator door fastener which operates to maintain the door tightly closed and which, at the same time, permits the door to be easily operated.

A further object of the invention is to provide
10 a refrigerator door fastener wherein a relatively large force is exerted by a spring pressed latch lever in maintaining the door tightly closed and wherein a lesser force is required to close the door against the action of the latch lever.

15 A still further object of the invention is to provide a refrigerator door fastener of the above type wherein the spring exerts a minimum force against the latch lever when the door is open whereby to facilitate the closing of the door,
20 and wherein the spring exerts a much greater force against the latch lever when the door is closed whereby to maintain the door sealed against the door frame.

The invention still further aims to provide a
25 refrigerator door fastener of the above type which consists of a minimum number of parts, thus simplifying the construction and assembly thereof, and which is highly efficient in operation.

The above and other objects of the invention
30 will be obvious and will be hereinafter more fully pointed out.

In the accompanying drawing:

Fig. 1 is a front elevation showing a hinged refrigerator door in closed position.

35 Fig. 2 is an enlarged fragmentary sectional view, taken along the line 2—2 of Fig. 1, showing the details of the fastener and the position of the latch lever when the door is closed.

Fig. 3 is a similar sectional view, showing the
40 position of the latch lever when the door is open.

The invention contemplates generally the provision of a refrigerator door fastener which is illustrated as including a keeper mounted on the door for cooperation with a spring pressed latch lever pivotally mounted on the door frame. Here-
45 tofore, increasing the force of the spring exerted against the lever to maintain the door more tightly closed, has been accompanied by a corresponding increase in force necessary to close the door.
50 According to the present invention, the door may be easily closed but, when closed, the spring pressed latch lever will exert a much greater force in maintaining the door sealed against the door frame. The latch lever and spring are mounted
55 within a casing. The spring acts upon the free

end of the pivoted lever to normally urge the same outwardly, that is, toward the keeper. The casing is provided with stop means for limiting the outward movement of the lever when the door is open. The lever is pressed against the keeper
5 when the door is closed. The keeper, latch lever, and stop means on the casing are so positioned relative to one another that the spring is extended when the door is open and is contracted or compressed when the door is closed. The spring
10 forces the lever outwardly against the stop means when the door is open and the keeper serves as a stop limiting the outward movement of the lever when the door is closed. Thus, the spring oper-
15 ates against the latch lever to exert a heavy pressure against the keeper in maintaining the door tightly closed and sealed and to exert a lesser pressure against the lever when the door is open so that relatively little force is required to close
20 the door.

Referring more in detail to the accompanying drawing, a refrigerator door 10 is shown as being pivotally mounted on the door frame 11 by hinges 12. The door is illustrated as having a flange portion 10a overlying the door frame 11. The
25 inner face of the flange portion 10a is provided with a gasket 13 which is compressed between the flange portion and the door frame so as to tightly seal the refrigerated chamber when the door is closed. The door 10 is provided with a keeper 14,
30 the body portion 15 of which is secured by bolts 16 or the like to the outer face of the door. The body portion 15 is provided with a handle 17 for opening and closing the door. The inner face of the body portion 15 is shaped to enclose the edge
35 of the flange portion 10a of the door 10 so that the outermost point of the keeper 14 is disposed below the outer face of the door when it is closed. The keeper 14 is provided with converging tapered faces 14a, 14b forming a contact member.
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The casing 18 is provided with outwardly extending ears or flanges 19 through which bolts 20 are passed for securing the casing to the door frame 11. The casing 18 is open at the end adjacent the door 10. A latch lever 21 is
45 pivotally mounted as at 22, in the sides of the casing 18. The lever 21 is provided with outwardly extending parallel spaced lugs 23 between the pivot 22 and the free end thereof. A roller 24 is rotatably mounted between the lugs 23.
50 The free end of the lever is provided with an integral cross portion 25. The rear end 18a of the casing and the cross portion 25 on the lever are provided with bosses 26, 27 respectively extending toward one another and serving as lo-
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cating or centering pins for the ends of a coil spring 28. The spring 28 tends to normally force the latch lever 21 outwardly so that the free end thereof abuts against a stop shoulder 29

- 5 formed at the forward top end of the casing 18. When the door 10 is open, as shown in Fig. 3, the free end of the lever 25 abuts against the stop shoulder 29 at the forward end of the casing 18. In this position of the latch lever 21, the spring 28 is extended. When it is desired to close the door, the outwardly tapered face 14a of the keeper 14 contacts with the roller 24. The initial force necessary to start the closing movement of the door need be only sufficient to overcome the resistance offered by the extended spring 28. As the spring is slightly contracted due to the inward movement of the latch lever 21, the initial force in starting the closing movement of the door is sufficient to effect the final closing of the door so that the roller 24 now abuts against the inwardly tapered face 14b of the keeper 14. In this position of the door, as shown in Fig. 2, the free end 25 of the lever 21 is spaced inwardly away from the stop shoulder 29 so that the spring 28 is compressed or contracted. Thus, the spring 28 exerts a greater force against the lever 21 and this force is multiplied in its transmission through the roller 24 to the keeper 14. There is, therefore, a constant relatively large force tending to maintain the door tightly closed with the sealing gasket 13 compressed between the door frame 11 and the flange portion 10a on the door. The tapered face 14b of the keeper 14 thus serves as a stop, when the door is closed, for limiting the outward movement of the latch lever 21, thus preventing the free end of the lever from contacting with the stop shoulder 29. A constant force tending to maintain the door tightly sealed, is thus assured. At the same time, the closing of the door requires a relatively small amount of force.

As shown in the drawing, the keeper 14 is disposed slightly below the outer face of the door 10 so that the parts of the latch lever mechanism extend outwardly a minimum distance from the door. The tapered surfaces on the keeper 14 and the roller 24 on the latch lever 21 tend to further reduce the force necessary to operate the door.

It is to be clearly understood that minor changes in the details of construction and arrangement of parts may be made without departing from the scope of the invention as set forth in the appended claim.

We claim:

A refrigerator door fastener comprising a latch lever pivotally mounted on the door frame and projecting outwardly therefrom, a roller mounted on said lever with the axis of the roller and the center of the lever support in a line substantially at right angles to the outer face of the door frame, a keeper mounted on the door and having inner and outer tapered faces intersecting to form a contact member adapted to engage said roller, spring means for urging said lever toward the keeper, said roller being disposed so that the contact member of the keeper passes the center of the roller whereby said spring urged roller contacting with the outer tapered face of the keeper will maintain said door tightly closed, and a stop for engaging the outer end of said lever when the keeper is moved out of engagement with the roller for limiting the movement of the roller so that the inner tapered face of the keeper contacting with the roller on the closing of the door will move the roller away from the keeper until the contact portion of the keeper passes the center of the roller.

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