Aug. 9, 1960 J. O. ROP 2,948,560

LATCH MECHANISM

Filed Feb. 15, 1957 3 Sheets-Sheet 1

Fig. 1.

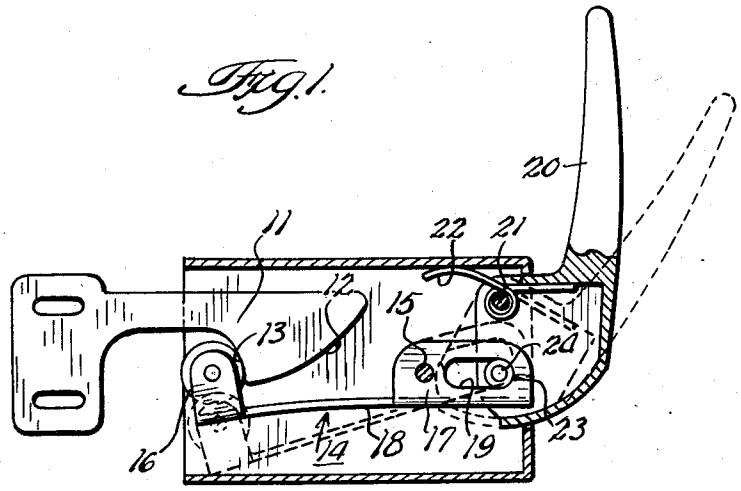



Fig. 2.

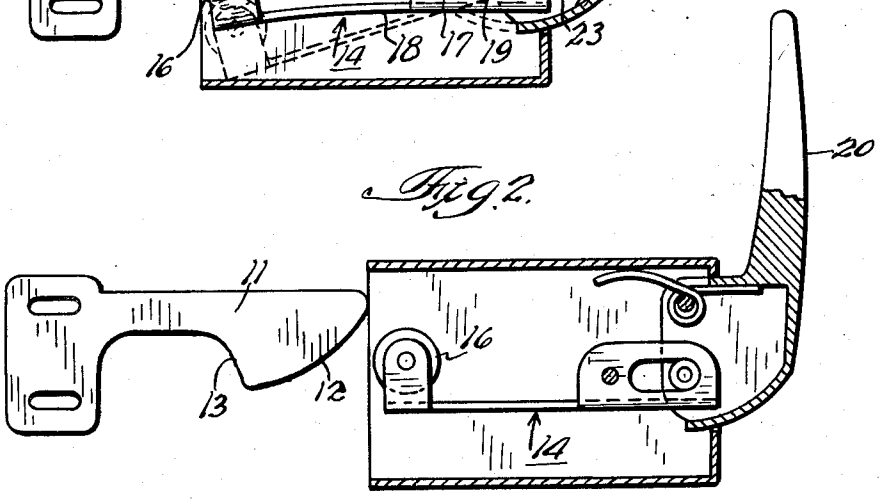
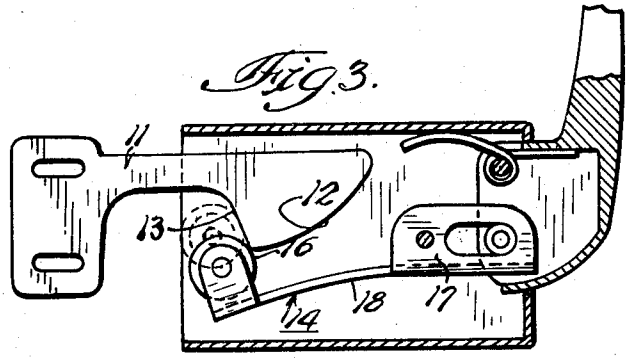



Fig. 3.




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LATCH MECHANISM

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Fig. 4.

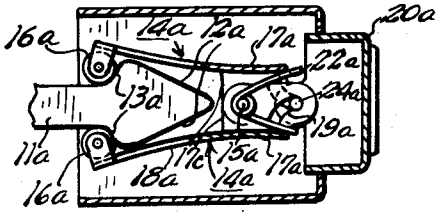
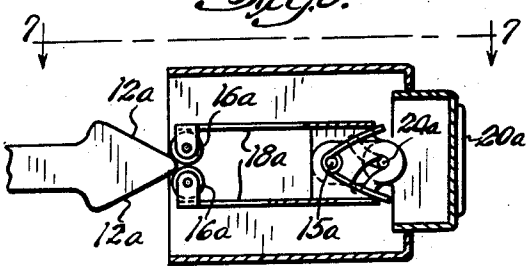



Fig. 6.



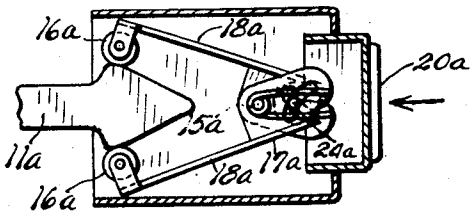




Fig. 5.

Fig. 7.

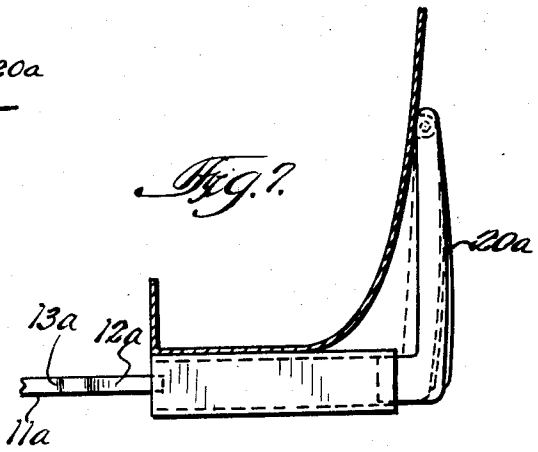



Fig. 8.

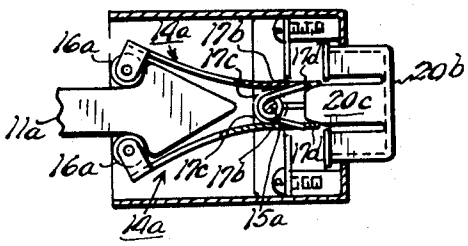
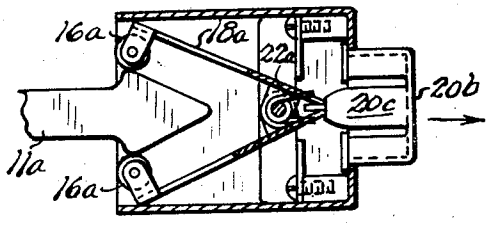



Fig. 9.




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LATCH MECHANISM

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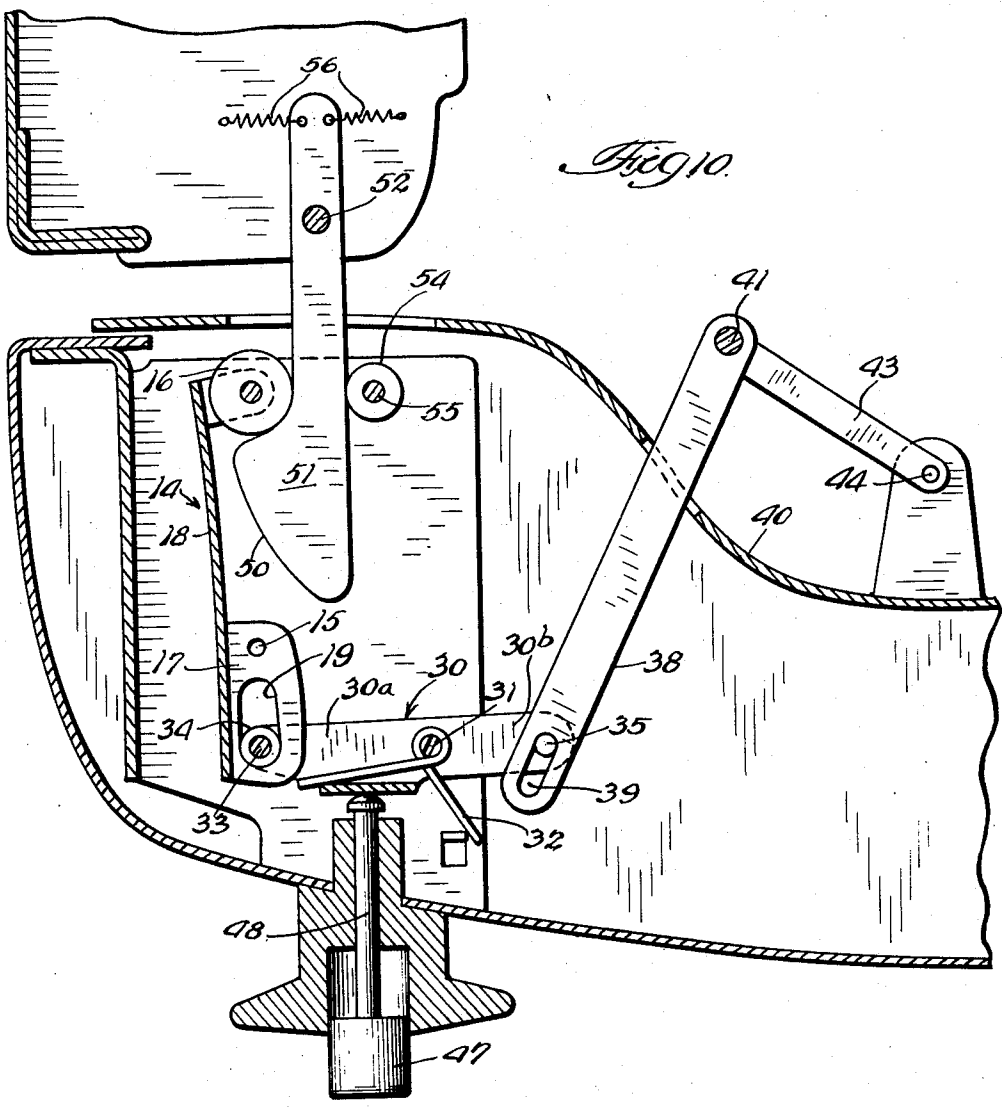



Fig 10.

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2,948,560

# LATCH MECHANISM

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Filed Feb. 15, 1957, Ser. No. 640,484

17 Claims. (Cl. 292—45)

This invention relates to an improved latch mechanism capable of drawing a closure tightly shut, and it is an object of the invention to provide an improved latch mechanism of that character.

Latch mechanisms for refrigerators and for other applications in which a tight closure is required are conventionally provided with powerful spring means for driving the latch bolt forcefully toward its latching position with respect to a keeper. The purpose of the spring force is to effect automatic closing of the associated door or closure over the last fraction of an inch of its closing movement. In this way, tight closure of the door is assured without reliance upon the operator remembering to push the door tightly shut—if the operator closes the door far enough that it will stay shut, the latch mechanism will necessarily pull the door to a tightly closed position.

In such latch mechanisms, the powerful spring which exerts this closing force must be energized by the operator during either the opening or the closing of the door. More commonly, the operator supplies the necessary energy during the opening of the door, that is, when he operates the handle to release the latch mechanism, he energizes the main spring. Means are provided for retaining the spring in its energized or cocked position during the time that the door is open. When the door is pushed shut, the apparatus which has thus far maintained the spring in cocked position is triggered to release the spring. The spring then drives the latch bolt forcibly toward its latching position. As the latch bolt is thus forced toward its latching position, it cooperates with the keeper to draw the door tightly shut. Such a latch mechanism is commonly termed a cocking latch mechanism.

Alternatively, energy may be supplied to the main spring during the closing of the door. In such case, the latch bolt generally rides over a sloping approach surface of the keeper, the sloping surface first forcing the latch bolt away from its latching position and then allowing the latch bolt to return forcibly to its latching position. The latter movement, of course, drives the door tightly shut. Energy is supplied to cock the main spring by pressure against the door as the latch bolt rides over the sloping approach surface of the keeper. Such a latch mechanism is sometimes referred to as slammable, and since the work of energizing the spring is done during the closing movement of the door, very little energy need be expended to release the latch mechanism. Release of the latch mechanism is effected by pulling the support out from behind the latch bolt spring.

The present invention is concerned with the latter type of latch mechanism, and incorporates a novel feature whereby the interconnection between the latch bolt and the bolt controlling member (handle or actuator) is greatly simplified and the total number of parts in the latch mechanism is substantially reduced. This is accomplished, in part, by making the latch bolt resiliently



flexible, or, in other words, by incorporating the main latch spring within the latch bolt itself.

Accordingly, it is another object of the invention to provide an improved latch mechanism capable of drawing a closure tightly shut and requiring energizing of its main spring only during its closing movement.

It is another object of the invention to provide an improved latch mechanism capable of drawing a closure tightly shut and requiring energizing of its main spring only during its closing movement and in which the main latch spring is incorporated in the latch bolt as a part thereof.

According to one particular embodiment of the invention, a pair of latch bolts are employed having spring means incorporated therein. These latch bolts engage opposite sides of the cooperating keeper such that substantially balanced forces are transmitted between the keeper and the latch bolts. This substantially eliminates any stresses being transmitted from the latch mechanism across the associated door, through the door hinges, and back through the associated cabinet or door frame to the keeper.

In accordance with still another embodiment of the invention, safety release means is provided whereby the latch mechanism may be operated from within the associated cabinet. This permits a child to release the latch mechanism and open the door if he should be trapped in the cabinet. In accordance with this particular embodiment of the invention, the strike is pivotally mounted on the associated door frame and, hence, cannot transmit torque to the door frame. More particularly, force applied to the pivoted keeper by the latch bolt is counterbalanced by a keeper-supporting roller which is mounted within the latch mechanism proper.

Accordingly, it is another object of the invention to provide an improved latch mechanism of the general character described above in which counterbalancing forces are applied to the keeper within the latch mechanism proper, such that substantially no resulting force need be transmitted through the hinges of the associated door.

It is another object of the invention to provide an improved latch mechanism of the general character described above which may readily be released from within the associated cabinet.

It is another object of this invention to provide an improved latch mechanism having various of the features specified above and which is simple in construction and reliable in operation.

This invention, together with the further objects and advantages thereof, will best be understood by reference to the following description taken in connection with the accompanying drawings, and its scope will be pointed out in the appended claims. As specifically hereafter designated, one or more of the figures of the drawings illustrate progressively changed positions of the various operating elements of the latch mechanisms. It is to be understood that the various illustrations are all part of the same generic invention, all as will be understood from a consideration of the appended claims.

In the drawings, in which like parts are designated by like reference numerals,

Figure 1 is a sectional view of a latch mechanism constructed in accordance with one embodiment of the invention;

Fig. 2 is a view of the Fig. 1 latch mechanism in one operating position;

Fig. 3 is a similar view of the Fig. 1 latch mechanism in still another operating position;

Fig. 4 is a sectional view of a latch mechanism illustrating another embodiment of the invention;

Fig. 5 is also a sectional view of the Fig. 4 latch mechanism in one operating position;

Fig. 6 is similar to Fig. 5 and shows the Fig. 4 latch mechanism in still another operating position;

Fig. 7 is a view of the Figs. 4, 5 and 6 latch—taken at 90° to the views in said figure—showing a suggested type of push-type operating handle and illustrating a suggested position for the latch mechanism with respect to the closure with which it is associated;

Fig. 8 is a sectional view of a latch mechanism embodying internally operating elements comparable to those in the Figs. 4, 5, 6 and 7 but which are operated by a pull-type handle;

Fig. 9 is a sectional view of the same latch mechanism as shown in Fig. 8 but wherein the elements are in a progressively different operating position; and

Fig. 10 is a sectional view of still another embodiment of the invention incorporating additional features.

As indicated above, a latch mechanism constructed in accordance with the present invention is well adapted for use on household refrigerators. It is to be understood, however, that such a latch mechanism has many other applications, particularly applications in which it is desired that the latch mechanism draw the associated closure tightly shut.

In the latch mechanism of Figs. 1, 2, and 3, a keeper 11 is shown which may, for example, be rigidly secured to a refrigerator cabinet. The keeper 11 has a gradually sloping approach surface 12 which leads into a locking or latching surface 13. The approach surface 12 is intended to force the associated latch bolt downwardly in Fig. 1 during the latter part of the closing movement of the associated door, the gradual slope of the approach surface 12 aiding to provide this displacement of the latch bolt gradually and without jarring. The locking or latching surface 13 of the keeper is intended to be engaged by the latch bolt to pull the door tightly shut.

A latch bolt 14 is shown pivotally mounted at 15. The latch bolt 14 comprises a keeper-engaging roller 16, a base portion 17, and an interconnecting resiliently flexible portion 18.

In the base portion 17 there is provided a slot 19 which, it will be noted, extends generally toward the pivotal axis 15 of the latch bolt. A handle 20 is shown pivotally mounted at 21 with a relatively lightweight spring 22 extending around the pivot pin of the handle and lightly urging the handle to pivot in a counterclockwise direction. A roller 23 is rotatably mounted on the handle 20 through a pin 24 and lies within the slot 19.

This latch mechanism is shown in its latched position in Fig. 1. It will be observed that any tendency of the latch bolt 14 to pivot in a counterclockwise direction, as a result of residual deflection of the latch bolt, is readily and effectively resisted by the interconnection of the latch bolt with the handle 20. More particularly, the surface of the base portion 17 of the latch bolt which forms the slot 19 bears directly upwardly against the roller 23. Since this force passes substantially through the pivotal axis 21 of the handle, the latter is not induced to pivot. Accordingly, the roller 23 remains stationary and prevents any pivotal movement of the latch bolt 14.

When it is desired to release the latching mechanism, the handle 20 is moved to the position indicated by the dotted lines in Fig. 1, against the relatively light force of the spring 22. This swings the roller 23 toward and upwardly of the pivotal axis 15 of the latch bolt, with the result that the latch bolt is moved to the position shown by the dotted lines in Fig. 1. It is to be noted that this releasing of the latch mechanism is accomplished with only the light force required to overcome the spring 22 plus small frictional resistance.

With the latch mechanism thus released, the associated door on which the latch mechanism proper may be mounted is free to open, the latch bolt roller 16 being clear of the keeper 11. After the door has been drawn partially open, the handle 20 may be released. The light spring 22 thereafter returns the handle 20 to its normal position, and this, in turn, moves the latch bolt 14 back to its normal position, as illustrated in Fig. 2.



When the door is pushed shut, the latch bolt roller 16 encounters the sloping approach surface 12 of the keeper, as illustrated in Fig. 3. Further closing movement of the door causes the roller 16 to ride along the sloping approach surface 12, the roller 16 thereby being forced downwardly, as viewed in Fig. 3. Such downward movement is necessarily accompanied by flexure of the intermediate portion 18 of the latch bolt, since the base portion 17 of the latch bolt is maintained in its normal or latching position by the handle 20 and the associated pin and slot means. As indicated above, the tendency of the base portion 17 of the latch bolt to pivot in a counterclockwise direction, as a result of the flexure of the intermediate bolt portion 18, is effectively resisted by the handle 20 because of the fact that the force applied to the roller 24 by the edge of the slot 19 is in a vertical direction such that it passes through the pivotal axis 21 of the handle 20. The handle 20 and the base portion 17 of the latch bolt are, in effect, toggled.

Further closing movement of the door causes the latch bolt roller 16 to ride over the peak of the keeper intermediate the approach surface 12 and the locking surface 13. The roller 16 is thereafter forced upwardly by the resilient intermediate bolt portions 18 and settles against the sloping locking surface 13 of the keeper. As roller 16 rides over sloping surface 13 the latch mechanism is pulled further toward the keeper by the action of the bolt, with the result that the associated door is pulled tightly shut. This final closing movement of the door by the latch mechanism itself may be utilized to compress a gasket between the door and the associated door frame.

In Fig. 3 the latch roller is shown in two positions in order to illustrate the long range over which the door is pulled as the latch mechanism moves it into its closed position. Two features very closely connected with or contingent upon this large pull-in capacity are a wide range of keeper settings and a constant holding force which becomes possible in this range. It is evident that the bolt roller could be anywhere on the arcuate latching surface of the keeper yet as long as the flexing or straining of the bolt spring remains constant the holding force or compression of the gasket will also be constant. Therefore, no close tolerances in the keeper setting are necessary.

Also, regardless of the keeper setting, the movement required of the handle to unlatch the mechanism remains the same. That is, there is no lost motion in the operating handle for a wide setting of the keeper. Other mechanical latches having a long cam pull-in feature usually have the undesirable long initial free or lost motion in the operating handle. With applicant's toggle arrangement to keep the bolt in latched position, the point at which the toggle is broken and the latch bolt released remains constant and, therefore, the unusually short movement of the operating handle does not depend upon the keeper setting or the contour of its latching surface.

These featured results are also presented by the mechanisms embodying the invention illustrated in Figs. 4–10 as will become evident from the descriptions of these mechanisms.

It will be noted that if the door is not pushed shut far enough to cause the latch bolt roller 16 to ride over the peak of the keeper and, hence, draw the door tightly shut, the action of the spring 18 will cause the latch bolt roller to retrogress along the slope surface 12 such that the door will be drawn open a substantial distance. The operator will then, of course, be aware of his failure to close the door properly. On the other hand, if the operator does close the door just far enough to cause the latch bolt roller to pass over the peak of the keeper,

no further effort is required by the operator to pull the door tightly shut or to compress a gasket between the door and the door frame, since the action of the latch bolt itself will serve to do this.

It will now be seen that in the embodiment of the invention illustrated in Figs. 1–3, a latch mechanism is provided which serves to draw the associated door tightly shut if the door is once pushed past a critical point. The energy required for this final closing movement of the door is provided by a spring **18** which is energized by the operator during the closing movement of the door. The latch mechanism may accordingly be released with very little effort on the part of the operator. Still further, the latch mechanism of Figs. 1–3 is extremely simple as a result of the fact that the main spring of the latch mechanism is incorporated in and forms a part of the latch bolt itself.

The embodiment of the invention illustrated in Figs. 4–7 is similar to that disclosed in Figs. 1–3 and described above, but is arranged to provide for the balancing of forces between the latch bolt and the keeper, especially during the closing movement of the door.

In Fig. 4 a double or arrowhead keeper **11***a* is shown having two sloping approach surfaces **12***a* and two locking or latching surfaces **13***a*. A pair of bolt members **14***a* are provided, each having a keeper-engaging roller **16***a*, a base portion **17***a* and a resiliently flexible intermediate portion **18***a*. The rollers **16***a* cooperate with the sloping approach surfaces **12***a* and locking surfaces **13***a* of the keeper **11***a* in substantially the same manner as the corresponding parts in the embodiment of the invention shown in Figs. 1–3 and described above.

The base portions **17***a* are pivotally mounted on a common fixed pin **15***a*, and a light spring **22***a* is wound around the pin **15***a*, its ends engaging the right-hand ends of the bolt members and urging them outwardly.

The two overlapping base portions **17***a* of the two bolt members have similar arcuate slots **19***a* through which a pin **24***a* passes. This pin is secured to a push button type of handle **20***a*.

It will now be understood that if the operator presses inwardly (to the left of Fig. 4) on the push button **20***a*, the pin **24***a* is also driven to the left and necessarily draws the right-hand ends of the latch bolt base portions **17***a* together because of the orientation of the slots **19***a*. This pivotal movement of the base portions **17***a*, best illustrated in Fig. 5, takes place against the action of the lightweight spring **22***a*. No further energy is required except that required to overcome small frictional forces. This pivotal movement of the base portions **17***a* swings the rollers **16***a* out of engagement with the keeper **11***a* such that the door with which the latch mechanism is associated may be opened.

After the door has been opened and the push button **20***a* has been released, the light spring **22***a* moves the otherwise freely floating latch bolts **14***a* to their normal or latching position, as illustrated in Fig. 6, the pin **24***a* and, hence, the push button **20***a* returning to the right. Fig. 7 shows the preferred type of push-type operating handle and illustrates the preferred positioning of the latch mechanism with respect to the closure with which it is associated.

When the door is pushed shut again, the rollers **16***a* engage the sloping approach surfaces **12***a* of the keeper and are forced apart. This, of course, produces a tendency for the latch bolts **14***a* to pivot in opposite directions, the latch bolt rollers **16***a* tending to separate and the right-hand ends of the latch bolts tending to converge. However, the pin **24***a* is, at that time, at the right-hand end of the slots **19***a*. The right-hand end of each of these slots may be seen to extend substantially directly away from the pivotal axis **15***a* of the latch bolts, whereby the forces exerted against the pin **24***a* by the edges of the slots **19***a* are in opposing substantially vertical directions with the result that there is little tendency for the pin **24***a* to move to the left. Accordingly, the pin **24***a* remains in the position of Fig. 6 and thereby effectively resists pivotal movement of the base portions **17***a* of the latch bolts. As the door is pushed further toward its closed position, then outward movement of the latch bolt roller **16***a* is necessarily accompanied by a flexing of the intermediate bolt portions **18***a*.



When the door is pushed far enough toward its closed position that the latch bolt rollers **16***a* pass over the peaks of the keeper **11***a*, the force of the springs **18***a* drives the latch bolt rollers into engagement with the corresponding locking surfaces **13***a* of the keeper. This action draws the door tightly shut and serves to compress any gasket which might be employed between the associated door and door frame. If closing movement of the door terminates before the latch bolt rollers **16***a* pass over the peaks of the keeper, the spring action of the intermediate bolt portions **18***a* causes the rollers to ride back to the right along the sloping surfaces **12***a*, causing the door to swing open and making it clear to the operator that he has not closed the door.

The latch mechanism disclosed in Figs. 4–7 and described above employs the various features of the latch mechanism of Figs. 1–3 and has the advantages thereof with the exception of requiring one additional part. The embodiment of Figs. 4–7 has the additional advantage of balanced forces operating against the keeper. In the embodiment of Figs. 1–3, the bolt member exerts an upward force, as viewed in the figures, during the forcible closing movement of the door. The keeper exerts a corresponding downward force against the latch bolt. These counteracting forces necessarily extend from the bolt member through the latch housing, across the associated door, through the hinges and back across the associated cabinet or door frame to the keeper. This may tend to produce straining of the door and, particularly, of the hinges over an extended period of usage. The embodiment of Figs. 4–7 eliminates, or substantially eliminates, this difficulty. The two bolt members **14***a* of this embodiment exert substantially equal and opposite vertical forces against the keeper **11***a* with the result that the only net force is a horizontal component, tending to draw the door shut. The equal and opposite vertical forces operate only through the bolt members and meet and counteract at the pin **24***a* and the pivot pin **15***a*. Basically, none of the forces exerted within the latch mechanism need be carried across the door of the cabinet and through the hinges.

The embodiment of the invention illustrated in Figs. 8 and 9 is very similar to that illustrated in Figs. 4–7 and described above. The only significant difference lies in the control member and its cooperation with the latch bolts.

The base portions **17***b* of this embodiment of the invention comprise overlapping ears **17***c* which pivot about the pin **15***a* and rearward extensions **17***d*. The rearward extensions **17***d* are normally spaced apart solidly by a spacer member **20***c*, forming a part of a release lever **20***b*. When the release **20***b* is pulled, the spacer **20***c* is withdrawn from the space between the extensions **17***d*, whereby the bolt members **14***a* may pivot to their released positions, as illustrated in Fig. 9. After the door has been pulled open, the bolt members **14***a* are returned to their normal or latching positions by the lightweight spring **22***a*, or as described above in connection with Figs. 4–6. When the lever **20***b* is released, the spacer **20***c* returns to its position between the extensions **17***d*, whereby the extensions **17***d* are retained in their spaced-apart positions until the release lever is again pulled.

When the door is pushed shut, the latch bolt rollers **16***a* ride over the keeper **11***a* in exactly the same manner as described above in connection with Figs. 4–6.

As indicated above, the only difference between the embodiments of Figs. 4–7 and Figs. 8 and 9 is in the controls and the construction by which they operate on the latch bolts. The embodiment of Figs. 4–7 employs

a pin 24*a* and a pair of slots 19*a*; whereas the embodiment of Figs. 8 and 9 employs a spacer 20*c*, forming part of the release lever 20*b* and being movable into and out of the space between the right-hand extensions 17*d* of the base portions 17*b* of the latch bolts.

The embodiment of the invention illustrated in Fig. 10 is provided with an arrangement for releasing the latch mechanism from the interior of the associated cabinet. The bolt member 14 in this latch mechanism may be identical to that illustrated in Fig. 1, including the latch bolt roller 16, the base portion 17 and the intermediate resiliently flexible portion 18. The bolt member is pivotally mounted on a pin 15 and has a slot 19 in the base portion thereof.

A control member 30 is provided which functions similar to the handle 20 of Fig. 1. Member 30 is pivotally mounted on pin 31 and has two oppositely disposed portions 30*a* and 30*b* which serve as lever arms. A light spring 32 is arranged to bias control member 30 in a counterclockwise direction as viewed in Fig. 10. A pin 33 is carried by member 30 on a lever arm portion 30*a*. A roller 34 is rotatably mounted on this pin and is adapted to fit and move within slot 19 of latch bolt base portion 17.

Lever arm portion 30*b* of control member 30 carries pin 35. A link 38 has a slot 39 at one end which is adapted to receive pin 35. The opposite end of link 38 extends through an aperture in the interior wall 40 of the refrigerator door panel. Pivot pin 41 pivotally connects link 38 to one end of arm 43. The other end of arm 43 may be pivotally connected by pin 44 to the refrigerator door interior wall 40.

It is evident that a child trapped within a refrigerator may push on lever 43 to effect unlatching of the mechanism and opening of the door. The pushing force would be transmitted through link 38 and would rotate control member 30 in clockwise direction about pivot pin 31. This action would cause roller 34 to move in slot 19 and the bolt member 14 to rotate about pivot 15 as more fully described in connection with the mechanism shown in Fig. 1.

The control member 30 rather than constituting an operating handle in itself is, in this instance, operated by a push button 47. The push button operates through a shaft 48 which bears against the control member 30 and may drive it in a clockwise direction about pivot pin 31. When the control member is so operated, it causes release of the latch bolt 14 in the same manner as in the latch mechanism illustrated in Fig. 1. Similarly, after the associated door is opened and the push button 47 is released, the light spring 32 returns the control member 30 to the position illustrated in Fig. 10, thereby causing the bolt member to return to its latching position. When the door is slammed shut, the latch bolt roller 16 rides over the sloping approach surface 50 of the keeper 51, and snaps into latching engagement with the keeper, all as described in connection with the embodiment of Fig. 1.

The keeper, however, is not rigidly secured to the associated cabinet or door frame but, instead, is pivotally mounted on a pin 52. Accordingly, if the desired interconnection between the keeper and the latch bolt is to be maintained, the keeper must be supported so that it cannot pivot in a counter-clockwise direction beyond the position illustrated in Fig. 10.

For this purpose keeper supporting roller 54 may be provided. Roller 54 may be rotatably mounted on a pin 55 which is mounted on the latch frame. Since the keeper is, in fact, pivotally mounted on the door frame or cabinet, no torque can be transmitted thereto and, hence, there is no lateral force to be transmitted through the door, the door hinges, and the cabinet or door frame. The counteracting forces applied to the keeper are, in fact, supplied by the two keeper-engaging rollers 16 and 54, and the forces are localized within the latch mechanism proper.

In order that the keeper may not deviate so far from its normal position that the forward tip thereof might fail to pass between the two rollers upon closing of the door, suitable means may be provided which urge the keeper to a centrally located position. One form of such locating means may be a double coil spring 56 illustrated roughly in Fig. 10.

It will now be seen that the latch mechanism disclosed in Fig. 10 provides for perfectly balanced counteracting forces being applied to the keeper by apparatus mounted on the latch mechaism housing with the result that all lateral forces are confined within the latch housing. Furthermore, a very simple and dependable apparatus is disclosed for releasing the latch mechanism from within the cabinet.

The pivotally mounted keeper 51 in combination with the supporting roller 54 is particularly desirable with a latch mechanism such as that disclosed in the drawings and incorporated in the apparatus of Fig. 10. This follows from the fact that in an easy opening latch mechanism, in which the main spring is energized during the closing of the door as the latch bolt rides over a sloping approach surface on the keeper, very large forces in a lateral direction (horizontal or vertical in a household refrigerator application), are developed. It is with such a latch mechanism that the pivotally mounted strike or keeper and the mechanism for localizing lateral forces within the latch housing are particularly desirable.

It will be apparent that the invention may be varied in its physical embodiment without departing from the spirit of the invention, and it is desired, therefore, that the invention be limited only by the prior art and the scope of the appended claims.

I claim:

1. In a releasable latch mechanism for cooperating with a keeper having a sloping approach surface the combination of, a bolt member pivotable between a latching position and a released position, said bolt member comprising a base portion, a keeper-engaging portion and an intermediate resiliently flexible portion, and bolt control means pivotally movable between two positions, said control means when in one of said positions permitting movement of said bolt member readily to said released position and when in the other of said positions engaging said base portion of said bolt member and maintaining at least said portion in its latching position, said resiliently flexible portion permitting said keeper-engaging portion to ride over said sloping approach surface and snap into latching position when said base portion is maintained in its latching position.

2. In a releasable latch mechanism for cooperating with a keeper having a sloping approach surface the combination of, a bolt member for releasably engaging said keeper, said bolt member comprising a base portion, a keeper-engaging portion and an intermediate portion, said base portion being pivotable between a latching position and a released position, a bolt control member, and cooperating slot and pin means arranged on said bolt control member and said base portion of said bolt member, said bolt control member being pivotable between two positions, said slot extending generally toward and away from the pivotal axis of said base portion of said bolt member and generally perpendicular to a line defined by said pin and the pivotal axis of said bolt control member when said bolt control member is in one of said two positions, whereby said bolt control member when in said one position readily prevents pivotal movement of said base portion of said bolt member, said bolt control member when moved to the other of said two positions causing relative movement of said pin with respect to said slot such that said slot and the line defined by said pin and the pivotal axis of said bolt control member are substantially displaced from perpendicularity whereby said bolt control member permits pivotal movement of said base portion to said released position, said keeper-engaging portion of said bolt member being engageable with said

sloping approach surface of said keeper when said bolt member and said keeper approach latching position and when said base portion of said bolt member is maintained in said latching position, said intermediate portion of said bolt member being resiliently flexible whereby said portion may flex as said keeper-engaging portion of said bolt member rides over said sloping approach surface and may urge said keeper-engaging portion forcefully into latching position when said keeper-engaging portion has passed over said sloping approach surface.

3. In a releasable latch mechanism for cooperating with a keeper having a sloping approach surface the combination of, a bolt member for releasably engaging said keeper, said bolt member comprising a base portion, a keeper-engaging portion and an intermediate portion, said base portion being pivotable between a latching position and a released position, a bolt control member, and cooperating slot and pin means arranged on said bolt control member and said base portion of said bolt member, said bolt control member being pivotable between two positions, said slot extending generally toward and away from the pivotal axis of said base portion of said bolt member and generally perpendicular to a line defined by said pin and the pivotal axis of said bolt control member when said bolt control member is in one of said two positions, whereby said bolt control member when in said one position readily prevents pivotal movement of said base portion of said bolt member, said bolt control member when moved to the other of said two positions causing relative movement of said pin with respect to said slot such that said slot and the line defined by said pin and the pivotal axis of said bolt control member are substantially displaced from perpendicularity whereby said bolt control member permits pivotal movement of said base portion to said released position, said bolt control member being biased toward said first position whereby said bolt control member normally urges said base portion of said bolt member toward said latching portion, said keeper-engaging portion of said bolt member being engageable with said sloping approach surface of said keeper when said bolt member and said keeper approach latching position and when said base portion of said bolt member is maintained in said latching position, said intermediate portion of said bolt member being resiliently flexible whereby said portion may flex as said keeper-engaging portion of said bolt member rides over said sloping approach surface and may urge said keeper-engaging portion forcefully into latching position when said keeper-engaging portion has passed over said sloping approach surface.

4. In a releasable latch mechanism, a keeper having two opposed sloping approach surfaces, a pair of bolt members for releasably engaging said keeper, pivotable in opposed directions to latching positions and in opposite directions to released positions, and bolt control means movable between two positions, said control means when in one of said positions permitting movement of said bolt members readily to said released positions and when in the other of said positions maintaining said bolt members in said latching positions, said bolt members being resiliently flexible whereby when said control means is in said other position the keeper-engaging portions of said bolt members may ride over said sloping approach surfaces and snap resiliently into their latching positions.

5. In a releasable latch mechanism, a keeper having two opposed sloping approach surfaces, a pair of bolt members for releasably engaging said keeper, pivotable toward each other to latching positions and away from each other to released positions, and bolt control means movable between two positions, said control means when in one of said positions permitting movement of said bolt members readily away from each other to said released positions and when in the other of said positions maintaining said bolt members in said latching positions, said bolt members being resiliently flexible whereby when said control means is in said other position the keeper-engaging portions of said bolt members may ride over said sloping approach surfaces and snap resiliently into their latching positions.

6. In a releasable latch mechanism, a keeper having two opposed sloping approach surfaces, a pair of bolt members for releasably engaging said keeper, pivotable in opposed directions to latching positions and in opposite directions to released positions, each of said bolt members comprising a base portion, a keeper-engaging portion and an intermediate resiliently flexible portion, and bolt control means movable between two positions, said control means when in one of said positions permitting movement of said bolt members readily to said released positions and when in the other of said positions engaging said base portions of said bolt members and maintaining at least said base portions in their latching positions, said resiliently flexible portions of said bolt members permitting said keeper-engaging portions of said bolt members to ride over said sloping approach surfaces and snap resiliently into their latching positions when said base portions are maintained in their latching positions.

7. In a releasable latch mechanism, a keeper having a pair of opposed sloping approach surfaces, a pair of bolt members for releasably engaging said keeper, each of said bolt members comprising a base portion, a keeper-engaging portion and an intermediate resiliently flexible portion, said base portions being pivotable in opposed directions about a common axis to latching positions and in opposite directions to released positions, said base portions each having an arcuate slot therein, a bolt control member, a pin fixedly mounted on said control member and arranged in said slots in said base portions of said bolt members, said bolt control member being movable between two positions, said slots at the ends thereof engaged by said pin when said bolt control member is in one of said positions extending generally toward and away from the common pivotal axis of said base portions of said bolt members whereby said bolt control member when in said one position readily prevents pivotal movement of said base portions of said bolt members, said bolt control member when moved to the other of said two positions causing relative movement of said pin in said arcuate slots whereby said bolt control member causes pivotal movement of said base portions to said released positions, said keeper-engaging portions of said bolt members being engageable with said sloping approach surfaces of said keeper when said bolt members and said keeper approach latching position and when said base portions of said bolt members are maintained in said latching positions whereby said intermediate portions of said bolt members may be caused to flex as said keeper-engaging portions of said bolt members ride over said sloping approach surfaces.

8. In a releasable latch mechanism, a keeper having a pair of opposed sloping approach surfaces, a pair of bolt members for releasably engaging said keeper, each of said bolt members comprising a base portion, a keeper-engaging portion and an intermediate resiliently flexible portion, said base portions being pivotable in opposed directions about a common axis to latching positions and in opposite directions to released positions, said base portions each having an arcuate slot therein, a bolt control member, a pin fixedly mounted on said control member and arranged in said slots in said base portions of said bolt members, said bolt control member being movable between two positions, said slots at the ends thereof engaged by said pin when said bolt control member is in one of said positions extending generally toward and away from the common pivotal axis of said base portions of said bolt members whereby said bolt control member when in said one position readily prevents pivotal movement of said base portions of said bolt members, said bolt control member when moved to the other of said

two positions causing relative movement of said pin in said arcuate slots whereby said bolt control member causes pivotal movement of said base portions to said released positions, said bolt control member being biased toward said first position whereby said bolt control member normally urges said base portions of said bolt members toward said latching portions, said keeper-engaging portions of said bolt members being engageable with said sloping approach surfaces of said keeper when said bolt members and said keeper approach latching position and when said base portions of said bolt members are maintained in said latching positions whereby said intermediate portions of said bolt members may be caused to flex as said keeper-engaging portions of said bolt members ride over said sloping approach surfaces.

9. In a releasable latch mechanism, a keeper having a pair of opposed sloping approach surfaces, a pair of bolt members for releasably engaging said keeper, each of said bolt members comprising a base portion, a keeper-engaging portion and an intermediate resiliently flexible portion, said base portions being pivotably mounted to permit movement of said keeper-engaging portions toward each other to latching positions and away from each other to released positions, said bolt members also having rear portions extending away from said keeper-engaging portions beyond said base portions in spaced-apart relationship, and a bolt control member movable into and out of position between said two rear portions of said bolt members, said bolt control member when between said rear portions of said bolt members preventing pivotal movement of said keeper-engaging portions of said bolt members away from each other to released positions, said bolt control member when moved out of position between said rear portions of said bolt members permitting pivotal movement of said keeper-engaging portions to said released positions, said keeper-engaging portions of said bolt members being engageable with said sloping approach surfaces of said keeper when said bolt members and said keeper approach latching position and when said rear portions of said bolt members are maintained apart by said bolt control member, whereby said intermediate portions of said bolt members may be caused to flex as said keeper-engaging portions of said bolt members ride over said sloping approach surfaces.

10. In a releasable latch mechanism, a keeper having a pair of opposed sloping approach surfaces, a pair of bolt members for releasably engaging said keeper, each of said bolt members comprising a base portion, a keeper-engaging portion and an intermediate resiliently flexible portion, said base portions being pivotably mounted to permit movement of said keeper-engaging portions toward each other to latching positions and away from each other to released positions, said bolt members also having rear portions extending away from said keeper-engaging portions beyond said base portions in spaced-apart relationship, and a bolt control member movable into and out of position between said two rear portions of said bolt members, said bolt control member when between said rear portions of said bolt members preventing pivotal movement of said keeper-engaging portions of said bolt members away from each other to released positions, said bolt control member when moved out of position between said rear portions of said bolt members permitting pivotal movement of said keeper-engaging portions to said released positions, said bolt control member being biased toward said position between said rear portions of said bolt members, said keeper-engaging portions of said bolt members being engageable with said sloping approach surfaces of said keeper when said bolt members and said keeper approach latching position and when said rear portions of said bolt members are maintained apart by said bolt control member, whereby said intermediate portions of said bolt members may be caused to flex as said keeper-engaging portions of said bolt members ride over said sloping approach surfaces.

11. For use in combination with a door member, a cabinet member, and a keeper pivotally mounted on one of said members and resiliently held in one of its pivotal positions, a novel latch mechanism for releasably engaging the keeper to hold the door member in closed position with respect to the cabinet member, said latch mechanism comprising, a latch housing mounted on the other of said members, a latch bolt pivotably mounted on said housing for movement between a latching position and a released position, bolt control means mounted on said housing and movable between two positions, said control means when in one of said positions permitting movement of said latch bolt readily to said released position and when in the other of said positions maintaining said latch bolt in said latching position, said latch bolt being resiliently flexible whereby when said members approach closed position with said control means in said other position the keeper-engaging portion of said latch bolt may ride over said sloping approach surface and snap resiliently into its latching position, guide means mounted on said housing opposite said latch bolt, said latch bolt when riding over said sloping approach surface adapted to urge said keeper into contact with said guide means such that substantially all laterally acting forces generated by said latch bolt upon said keeper are confined within the latch housing.

12. For use in combination with a door member, a cabinet member, and a keeper pivotally mounted on one of said members and resiliently held in one of its pivotal positions, a novel latch mechanism for releasably engaging the keeper to hold the door member in closed position with respect to the cabinet member, said latch mechanism comprising, a latch housing mounted on the other of said members, a latch bolt pivotably mounted on said housing for movement between a latching position and a released position, bolt control means mounted on said housing and movable between two positions, said control means operable from outside said cabinet member, said control means when in one of said positions permitting movement of said latch bolt readily to said released position and when in the other of said positions maintaining said latch bolt in said latching position, means operable from within said cabinet member for effecting movement of said control means to said one position, said latch bolt being resiliently flexible whereby when said members approach closed position with said control means in said other position the keeper-engaging portion of said latch bolt may ride over said sloping approach surface and snap resiliently into its latching position, guide means mounted on said housing opposite said latch bolt, said latch bolt when riding over said sloping approach surface of said keeper adapted to urge said keeper into contact with said guide means such that substantially all laterally acting forces generated by said latch bolt upon said keeper are confined within the latch housing.

13. For use in combination with a door member, a cabinet member, and a keeper having a sloping approach surface and being mounted on one of said members, a latch mechanism for releasably engaging the keeper to hold the door member in closed position with respect to the cabinet member, said latch mechanism comprising, a latch housing mounted on the other of said members, a latch bolt pivotably mounted on said housing for movement between a latching position and a released position, bolt control means mounted on said housing and movable between two positions, said control means being operable from outside said cabinet member, said control means when in one of said positions permitting movement of said latch bolt readily to said released position and when in the other of said positions maintaining said latch bolt in said latching position, said latch bolt being resiliently flexible whereby when said members approach closed position with said control means in said other position the keeper-engaging portion of said latch

bolt may ride over said sloping approach surface and snap resiliently into its latching position, and means operable from within said cabinet member for effecting movement of said control means to said one position.

14. For use in combination with a door member, a cabinet member, and a keeper having a sloping approach surface and being mounted on one of said members, a latch mechanism for releasably engaging the keeper to hold the door member in closed position with respect to the cabinet member, said latch mechanism comprising, a latch housing mounted on the other of said members, a latch bolt pivotably mounted on said housing for movement between a latching position and a released position, bolt control means mounted on said housing and movable between two positions, said control means being operable from outside said cabinet member, said control means when in one of said positions permitting movement of said latch bolt readily to said released position and when in the other of said positions maintaining said latch bolt in said latching position, said latch bolt being resiliently flexible whereby when said members approach closed position with said control means in said other position the keeper-engaging portion of said latch bolt may ride over said sloping approach surface and snap resiliently into its latching position, lever control pivotally connected to said bolt control means and operable from within said cabinet member for effecting rotation of said bolt control means into said one position.

15. In a releasable latch mechanism for cooperating with a keeper having a sloping approach surface the combination of, a bolt having a base portion pivotally movable about an axis between a latching position and a released position, a keeper engaging portion and a flexible intermediate portion connecting said keeper engaging portion to said base portion, said keeper engaging portion and said intermediate portion extending outwardly from said base portion in one direction, and said base portion having formations thereon extending outwardly therefrom in the opposite direction, and a manually operable control member having an element thereon movable toward and away from the axis of said base portion between two positions, said control member when in one of said positions being effective to prevent pivotal movement of said base portion into a released position, and when in the other of said positions permitting the pivotal movement of said base portion into a released position.

16. In a releasable latch mechanism for cooperating with a keeper having a sloping approach surface the combination of, a bolt member for releasably engaging said keeper, said bolt member comprising a base portion, a keeper engaging portion and an intermediate portion, said base portion being pivotally movable between a latching position and a released position, a bolt control member, and cooperating slot and pin means arranged on said bolt control member and the base portion of said bolt member, said bolt control member being movable between two positions, said bolt control member when in one of said positions being effective to prevent pivotal movement of the base portion of said bolt member and when in the other of said positions causing relative movement of said pin with respect to said slot to permit pivotal movement of said base portion into its released position, said keeper engaging portion of said bolt member being engageable with said sloping approach surface of said keeper when said bolt member and said keeper approach latching position and when said base portion of said bolt member is maintained in said latching position, said intermediate portion of said bolt member being resiliently flexible whereby said portion may flex as said keeper engaging portion of said bolt member rides over said approaching surface and may urge said keeper engaging portion forcfully into latching position when said keeper engaging portion has passed over said sloping approach surface.

17. For use in combination with a door member, a cabinet member, and a keeper having a sloping approach surface and being pivotally mounted on one of said members and resiliently held in one of its pivotal positions, a novel latch mechanism for releasably engaging the keeper to hold the door member in closed position with respect to the cabinet member, said latch mechanism comprising a latch housing mounted on the other of said members, a latch bolt pivotally mounted on said housing for movement between a latching position and a released position, bolt control means mounted on said housing and movable between two positions, said control means operable from outside said cabinet member, said control means having a portion which engages a corresponding portion of said latch bolt to urge said latch bolt into its latching position when said control means is moved toward one of its positions, the bolt engaging portion and the pivotal axis of said control means being substantially tangentially aligned with the path of the engaged portion of the pivotally movable bolt, whereby said bolt may be locked in its latching position when said control means is in said one position, means operable from within said cabinet member for effecting movement of said control means to said one position, said latch bolt being resiliently flexible whereby when said members approach closed position with said control means in said other position the keeper-engaging portion of said latch bolt may ride over said sloping approach surface and snap resiliently into its latching position, guide means mounted on said housing opposite said latch bolt, said latch bolt when riding over the sloping approach surface of the keeper adapted to urge the keeper into contact with said guide means such that substantially all laterally acting forces generated by said latch bolt upon the keeper are confined within said latch housing.

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