Nov. 6, 1951 A. COLONNA 2,574,244

REFRIGERATOR DOOR LATCH

Filed March 17, 1948 2 SHEETS—SHEET 1

Fig. 1.

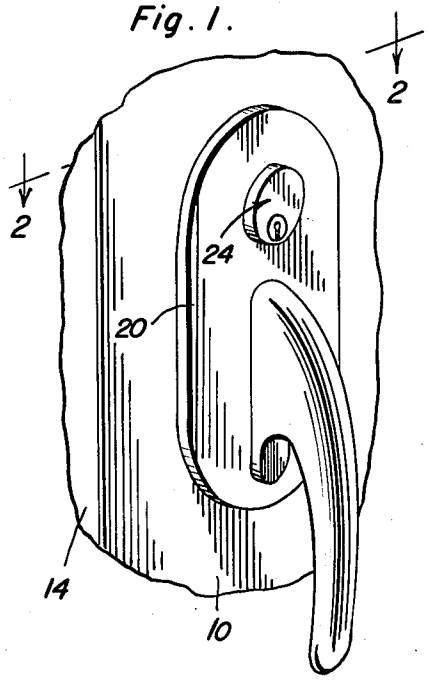


Fig. 6.

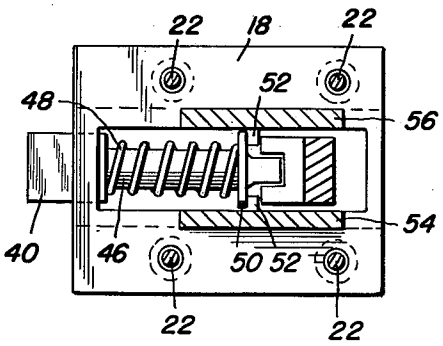
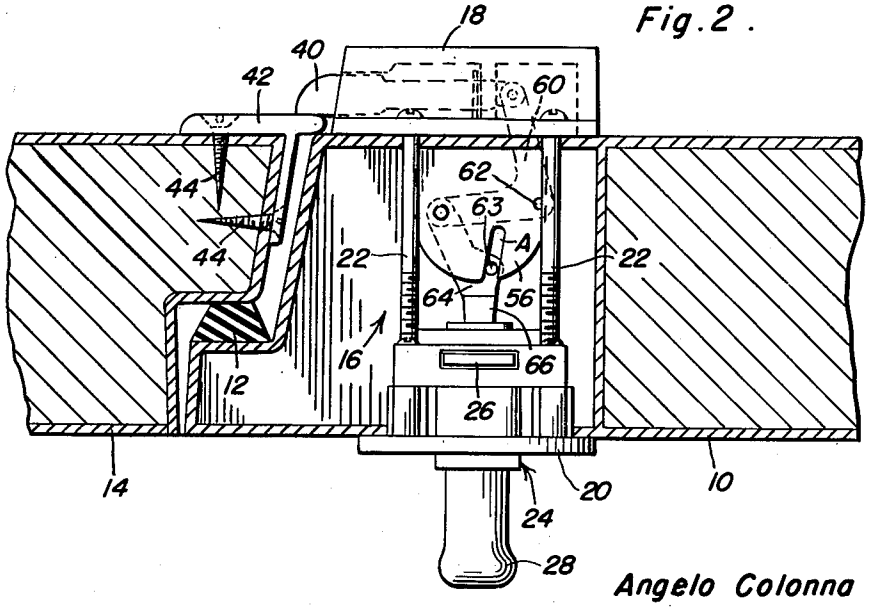


Fig. 2.



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Fig. 3.

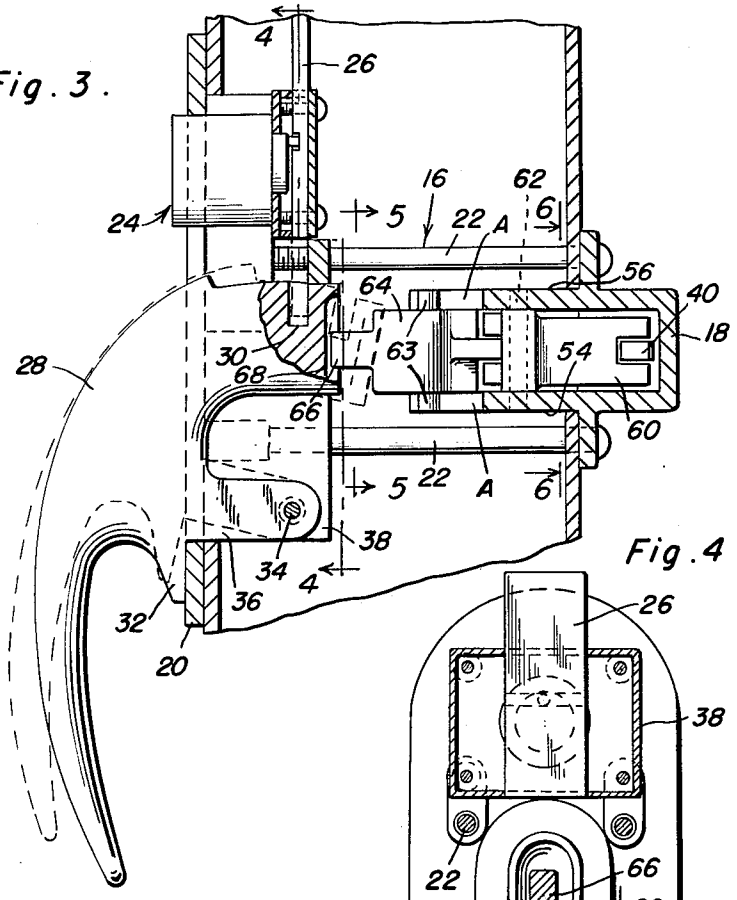


Fig. 4

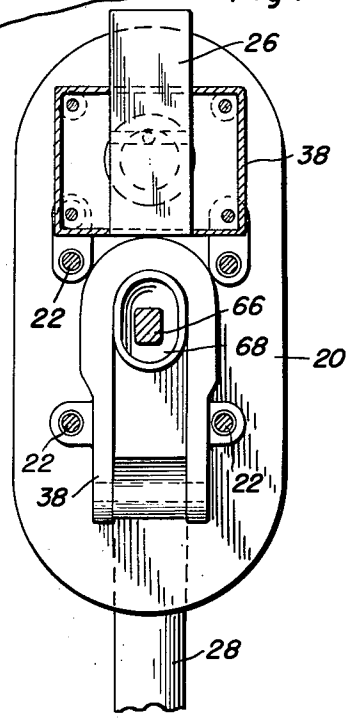
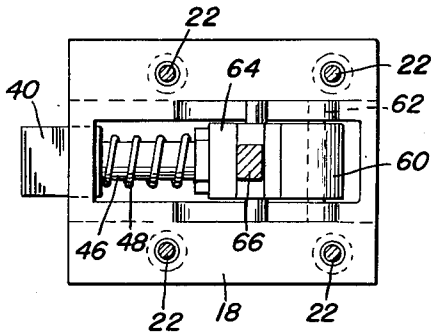


Fig. 5.



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REFRIGERATOR DOOR LATCH

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Application March 17, 1948, Serial No. 15,471

11 Claims. (Cl. 292—167)

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This invention appertains to novel and useful improvements in closures for use particularly in association with refrigerator doors.

An object of this invention is to maintain a refrigerator door or the like in the closed and locked position by improved means.

Another object of this invention is to transmit pivotal movement of the handle to sliding movement of a latch bolt, which latch bolt cooperates with the locking plate for maintaining a door or closure in closed position.

Another object of this invention is to resiliently bias the latch bolt independently of the handle.

Another object of this invention is to latch a closure and release the closure by improved means.

Another object of this invention is to provide a smoothly operative simplified device of the character described which is adapted for use in many environments, particularly in association with refrigerator doors.

Ancillary objects and features of novelty will become apparent to those skilled in the art, in following the description of the preferred form of the invention, illustrated in the accompanying drawings, wherein:

Figure 1 is a perspective view of a portion of the door, showing the invention associated therewith;

Figure 2 is a transverse sectional view taken substantially on the line 2—2 in Figure 1 and in the direction of the arrows;

Figure 3 is a longitudinal sectional view of the preferred form of the invention;

Figure 4 is a sectional view taken substantially on the line 4—4 in Figure 3 and in the direction of the arrows;

Figure 5 is a sectional view taken on the line 5—5 in Figure 3 and in the direction of the arrows, and;

Figure 6 is a sectional view taken substantially on the line 6—6 of Figure 3 and in the direction of the arrows.

A suitable door or closure is fragmentarily illustrated and indicated at 10. This closure is of course conventional in nature and is utilized to illustrate any type of door whereon the invention is adapted to be positioned. As is commonly used in refrigerators, a resilient insulation element 12 is supplied between the door and the relatively stationary portion 14 of the said refrigerator.

A housing generally indicated at 16 is supplied. This housing is so described since it supports and partially encloses a plurality of elements. Forming a portion of the housing is a small case 18 connected to a front or face plate 20 by means of stay bolts 22.

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A conventional lock generally indicated at 24 is supplied in association with the housing and more particularly the face plate 20 through which it projects. This lock includes a dog 26 which is actuated thereby for locking the handle 28 in a predetermined position. It is readily appreciated upon inspection of Figure 3 that upon actuation of the lock 24, the dog 26 may be raised and lowered in order to seat the same in the slot 30 formed in the said handle 28.

The said handle 28 includes an extension 32 which cooperates with the outer surface of the said plate 20 for limiting the pivotal travel thereof. Of course the handle is pivoted through the medium of a conventional pivot pin 34 or the like which penetrates a projecting portion of the handle 28. The said handle as well as the lock 24 may be supported between suitable structural elements 36 which are a portion of the said housing 16.

Slidably received in the said case 18 is a bolt 40, one terminal of which cooperates with a keeper plate 42. This keeper plate 42 may be attached to the relatively stationary portion of the refrigerator cabinet or casing through the medium of conventional screws 44 or the like.

The bolt 40 has a reduced shank 46 whereon is seated a spring 48 or any other suitable equivalent resilient biasing means. The said spring 48 reacts on a collar 50 slidably mounted on the said reduced shank 46 and the case 18, normally biasing the bolt 40 in a selected direction. The said collar 50 rests on a pair of lugs 52 which are formed integral with the said case 18 thereby directing the force of the spring 48 in the desired manner.

The said case is formed with a pair of plates 54 and 56 which are adapted to project within the closure of door 10. These plates have a bell crank 60 pivoted thereto through the medium of a conventional pin 62. One end of the said bell crank is pivotally associated with the bolt 40 while the other end is pivotally associated with a link 64.

The said link 64 is also pivoted between the said plates 54 and 56 and has an integral lug 66 associated therewith. This integral lug cooperates with a recess 68 wherein it is seated. The said recess 68 is formed in the said handle 28 and is utilized for the purpose of transmitting pivotal movement of the handle to pivotal movement of the link 64 but in a plane which is

perpendicular to the said pivotal movement of the handle 28. The movement of the link 64 is restricted by the pins 63 attached to the link 64 which are guided in the aligned slots or passages A formed in the plates 54 and 56 respectively. The movement of the link 64 is in turn transmitted to the bell crank 60 in the same plane by means of a free pivot connection between the link 64 and the crank 60, while the movement of the bell crank is transmitted to sliding movement of the bolt 40. Accordingly, the pivotal movement of the handle 28 is therefore transferred to sliding movement of the bolt 40 for lockingly engaging the bolt plate 42 as described above.

From the foregoing a clear understanding of the present invention is deemed readily apparent. However, it is understood that certain variations may be made without departing from the spirit thereof. Accordingly, limitation is sought only in accordance with the scope of the following claims.

Having described the invention, what is claimed as new is:

1. In a latch construction which includes a pivoted handle, a reciprocating bolt and a plate, the improvement comprising a crank pivoted to said plate and said bolt, means reacting on said bolt opposing the retraction thereof, and means for retracting said bolt which includes said crank and a link slidingly engaging said handle and pivoted to said crank actuated by movement of said handle, said handle having a recess therein with said link having an end thereof slidingly disposed in said recess, said plate having a slot, and a pin carried by said link and disposed in said slot limiting the movement of said link in accordance with the confines of said slot.

2. In a latch construction which includes a pivoted handle, a reciprocating bolt and a plate, the improvement comprising a crank pivoted to said plate and said bolt, means reacting on said bolt opposing the retraction thereof, and means for retracting said bolt which includes said crank and a link slidingly engaging said handle and pivoted to said crank and adapted to be actuated by movement of said handle, said handle having a recess therein with said link having an end thereof slidingly disposed in said recess, said plate having a slot, a pin carried by said link and disposed in said slot limiting the movement of said link in accordance with the confines of said slot, and a bolt case within which said bolt is disposed.

3. A latch construction comprising a face plate having an opening therein adapted to be disposed on the front of a door, a bolt case adapted to be disposed on the rear of the door, means fixing together said plate and said case in spaced relation with respect to each other, a pair of substantially parallel plates fixed to said case and extending toward said face plate, said parallel plates having slots therein, a bolt disposed in said bolt case, a crank pivoted to said parallel plates intermediate its ends and pivoted at one end to said bolt, a link pivoted to the opposite end of said crank, means carried by said link and operable in said slots guiding the movement of said link, and a part of said link slidingly contacting said handle whereby movement of said handle is transferred to said link to operate said bolt through pivotal movement of said crank, and means reacting on said bolt opposing the retraction thereof.

4. A latch construction comprising a face plate

having an opening therein adapted to be disposed on the front of a door, a bolt case adapted to be disposed on the rear of the door, means fixing together said plate and said case in spaced relation with respect to each other, a pair of substantially parallel plates fixed to said case and extending toward said face plate, said parallel plates having slots therein, a bolt disposed in said bolt case, a crank pivoted to said parallel plates intermediate its ends and pivoted at one end to said bolt, a link pivoted to the opposite end of said crank, said bolt, link and crank being operable in substantially one plane, and said handle being operable in a plane transverse thereto, pins carried by said link and disposed in said slots limiting the travel of said link in its plane of movement, said link contacting said handle for transmission of movement from said handle to said link, and means reacting on said case and said bolt opposing the retraction of said bolt.

5. A latch construction comprising a face plate having an opening therein adapted to be disposed on the front of a door, a bolt case adapted to be disposed on the rear of the door, means fixing together said plate and said case in spaced relation with respect to each other, a pair of substantially parallel plates fixed to said case and extending toward said face plate, said parallel plates having slots therein, a bolt disposed in said bolt case, a crank pivoted to said parallel plates intermediate its ends and pivoted at one end to said bolt, a link pivoted to the opposite end of said crank, said bolt, link and crank being operable in substantially one plane, and said handle being operable in a plane transverse thereto, pins carried by said link and disposed in said slots limiting the travel of said link in its plane of movement, said link contacting said handle for transmission of movement from said handle to said link, means reacting on said case and said bolt opposing the retraction of said bolt, and said handle having a recess therein with the part of said link contacting said handle disposed in said recess.

6. A latch comprising a housing adapted to seat within a door and having a handle pivoted therein, a bolt slidably positioned in said housing, a recess in said handle, means pivoted to said bolt and mounted in said housing including a lug slidably received in said recess for converting pivotal movement of said handle to sliding movement of said bolt, and a spring reacting on said bolt and said housing opposing the handle movement and opposing the retraction of said bolt.

7. A latch comprising a housing adapted to seat within a door and having a handle pivoted therein for movement in a first plane, a bolt slidably positioned in said housing and movable in a plane transverse to said first plane, a recess in said handle, means pivoted to said bolt and mounted in said housing including a lug slidably disposed in said recess for transmitting pivotal movement of said handle to sliding movement of said bolt, and means seated in said housing and reacting on said bolt for resiliently opposing the retraction of said bolt.

8. A latch comprising a housing adapted to seat within a door and having a handle pivoted therein, a bolt slidably positioned in said housing, a spring seated in said housing reacting on said bolt constantly biasing said bolt, a recess formed in said handle, a link pivoted within said housing, one end of said link slidingly disposed within the recess, means pivoted to said bolt

and pivoted to said link for transmitting movement from said handle to said bolt, said housing having a passage therein, and a guide pin carried by said link and disposed in said passage.

9. In a latch, a housing including a face plate engageable with one of the faces of a door, a case forming a part of said housing detachably secured to said face plate, a handle pivoted to said housing, a bolt slidably received in said case, means in said housing for transmitting pivotal movement of said handle to sliding movement of said bolt, a spring seated in said case and reacting on said bolt opposing the retraction of said bolt, and said means having a pin operable in a slot in said housing forming a guide for said means.

10. In a latch, a housing including a face plate engageable with one of the faces of a door, a case forming a part of said housing secured to and spaced from said face plate, a handle pivoted to said housing and passed through said face plate, a bolt slidingly received in said case, means in said housing for transmitting pivotal movement of said handle to sliding movement of said bolt, a spring seated in said case and reacting on said bolt opposing the retraction of said bolt, said means including a link having a lug, a recess in said handle having said lug slidably received therein, a bellcrank pivotally secured within said housing, means for connecting said crank to said bolt and to said link, and

means carried in part by said link and formed in part in said housing for guiding said link.

11. In a latch, a housing including a face plate engageable with one of the faces of a door, a case forming a part of said housing, a handle pivoted to said housing, a bolt slidingly received in said case, means operatively connected with said handle and said bolt and disposed in said housing for transmitting pivotal movement of said handle to sliding movement of said bolt, a plate secured to said case and having a passage therein, a pin carried by said movement transmitting means disposed in said passage to limit and guide the movement of said movement-transmitting means, and an extension secured to said handle and engageable with said face plate for limiting the pivotal travel of said handle.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
775,593	Bauman	Nov. 22, 1904
1,256,992	Edgar et al.	Feb. 19, 1918
2,156,513	Roedding	May 2, 1939
2,317,700	Thompson	Apr. 27, 1943
2,397,671	Larson	Apr. 2, 1946
2,423,937	Humer	July 15, 1947