Sept. 22, 1925. 1,554,205

A. EKMAN

DOOR LATCH

Filed Nov. 8, 1924

Fig. 1.

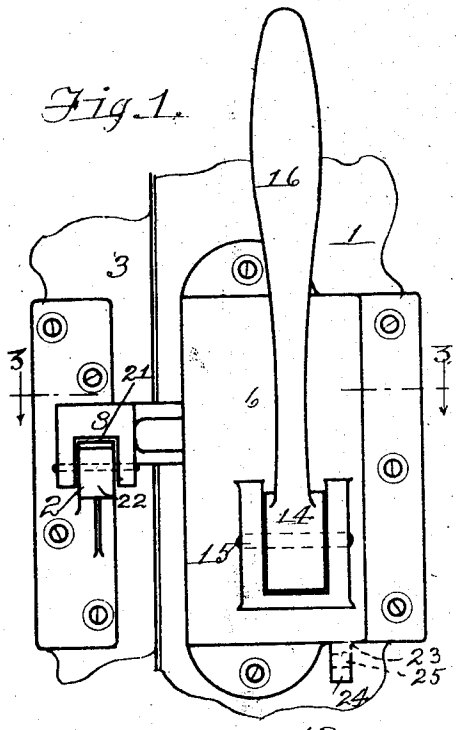
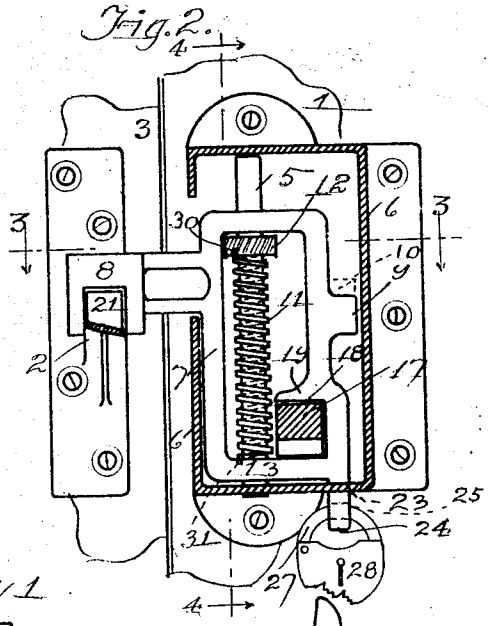


Fig. 2.



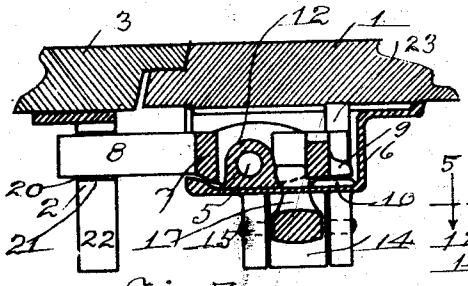


Fig. 3.

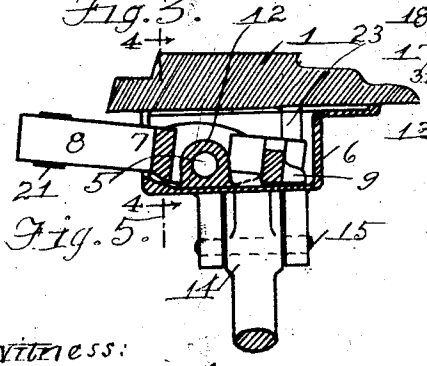


Fig. 5.

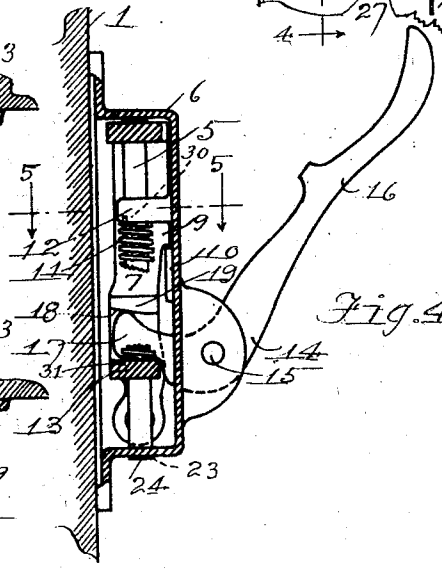


Fig. 4.

Witness:

Inventor

Andrew Ekman

By Cyrus W. Rice

Attorney

Patented Sept. 22, 1925. 1,554,205

UNITED STATES PATENT OFFICE.

ANDREW EKMAN, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO GRAND RAPIDS BRASS COMPANY, OF GRAND RAPIDS, MICHIGAN, A CORPORATION OF MICHIGAN.

DOOR LATCH.

Application filed November 8, 1924. Serial No. 748,578.

To all whom it may concern:

Be it known that I, ANDREW EKMAN, a subject of the King of Sweden, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented new and useful Improvements in Door Latches, of which the following is a specification.

The present invention relates to latches for swingable doors, such as the doors of refrigerators and the like; and its object is, generally, to provide an improved device of that character whereby such doors may be securely and tightly held shut, and may nevertheless be easily opened.

This and other and more specific objects hereinafter appearing are attained by, and the invention finds preferable embodiment in, the structure hereinafter particularly described in the body of this specification and illustrated by the accompanying drawings, in which:

Figure 1 is a front view of a latch carried by a swingable door and the keeper therefor carried by the jamb of the door;

Figure 2 is a like view of the same, the front wall of the casing however being broken away on a vertical sectioning plane and the operating lever handle being sectioned on the same plane;

Figure 3 is a sectional view of the same taken on a horizontal plane corresponding to line 3—3 of Figures 1 and 2;

Figure 4 is a sectional view of the same taken on a vertical plane corresponding to line 4—4 of Figure 5, the parts being shown in this view in the unlatching or inoperative position of the bolt of the latch; and

Figure 5 is a sectional view of the same taken on a horizontal plane corresponding to line 5—5 of Figure 4.

In the drawings, my improved latch is shown mounted adjacent the free edge of a swingable refrigerator door 1, the keeper 2 of the latch being mounted on the jamb 3 of the door. On a round rod or bearing member 5 inside the casing 6 of the latch, the bolt 7 of the latch is mounted, and has a sliding movement therealong and a rocking movement thereabout. This bolt's lateral extension 8 latchingly engages the keeper 2, the bolt being movable slidably on the member 5 into and out of latching position. The bolt 7 has a lug or projection 9 adapted to rest on a support or shelf 10, extending from the inner surface of the outer wall of the casing, when the bolt is slidably moved upwardly into its unlatching position and is rocked into a position in which said lug is above said support. A helical spring 11 surrounding the bearing member 5 and pressing against a ledge 12 and the lower cross bar 13 of the bolt, urges the bolt into its latching position. A lever 14 fulcrumed at 15 on the casing has an operating handle arm 16 and a short arm 17 frictionally bearing on the under surface 18 of a portion 19 of the bolt. When the handle arm 16 is drawn outwardly into the position seen in Figure 4, the short arm 17 engaging the surface 18 of the bolt's said portion, forces the bolt upwardly along the bearing member or rod 5; and when the bolt's lug 9 is thus moved to a position above the support 10, the frictional engagement of said short arm with said surface 18 rocks the bolt about the axis of the bearing member 5 sufficiently to bring said lug 9 immediately over the support whereupon, the handle arm being released, the spring 11 presses the lug 9 on the support 10 to maintain the bolt in its inoperative or unlatching position seen in Figures 4 and 5. The surface 18 is somewhat inclined as shown in Figure 4 to augment the friction of the short arm 17 thereon. As the door is swung to closed position, its keeper-engaging outer end 8 strikes the inner approximately-vertical surface of the keeper or door jamb and rocks the bolt reversely, thus moving its lug 9 off of the support 10, whereupon the spring 11 immediately presses the bolt downwardly and its keeper-engaging end 8 into latching engagement in the socket 20 of the keeper, thus holding the door tightly shut. This keeper-engaging end 8 of the bolt is preferably furnished with an anti-friction roll 21 adapted to ride up on the inclined outer-upper surface 22 of the keeper when the door is slammed shut.

The casing has an opening 23 in its lower wall through which extends a portion 24 of the bolt provided with an orifice or keeper 25 which is outside the casing in the latching or operative position of the bolt seen in Figure 2. The bolt 27 of a pad lock 28 may be passed through this keeper orifice to lock the door shut.

The ends 30 and 31 of the spring 11 may be so held or anchored, as shown in Figures 2 and 4, as to tension said spring torsionally

to rock the bolt in the direction which presses the lug 9 into resting position on the support 10, thus supplementing or replacing the frictional action of the lever's short arm 17 on the bolt's surface 18.

The invention being intended to be pointed out in the claims, is not to be limited to or by details of construction of the particular embodiment thereof illustrated by the drawings or hereinbefore described.

I claim:

1. In combination with a keeper therefor, a door latch comprising: a support; a bolt having a reciprocating movement into and out of latching engagement with the keeper and a rocking movement, about an axis disposed parallelly with the direction of said reciprocating movement, into and out of resting position on the support; an operating handle adapted to move the bolt out of latching position and into resting position on the support.

2. In combination with a keeper therefor, a door latch comprising: a support; a bolt having a reciprocating movement into and out of latching engagement with the keeper and a rocking movement, about an axis disposed parallelly with the direction of said reciprocating movement, into and out of resting position on the support; an operating handle adapted to move the bolt out of latching position and into resting position on the support; a spring pressing the bolt into latching position.

3. In combination with a keeper therefor, a door latch comprising: a support; a bolt having a reciprocating movement into and out of latching engagement with the keeper and a rocking movement, about an axis disposed parallelly with the direction of said reciprocating movement, into and out of resting position on the support; an operating lever handle engaging the bolt and adapted to move the same out of latching position and into resting position on the support.

4. In combination with a keeper therefor, a door latch comprising: a support; a bolt having a reciprocating movement into and out of latching engagement with the keeper and a rocking movement, about an axis disposed parallely with the direction of said reciprocating movement, into and out of resting position on the support; an operating lever handle engaging the bolt and adapted to move the same out of latching position and into resting position on the support; a spring pressing the bolt into latching position.

5. In combination with a keeper therefor, a door latch comprising: a support; a bolt having a reciprocating movement into and out of latching engagement with the keeper and a rocking movement, about an axis disposed parallelly with the direction of said reciprocating movement, into and out of resting position on the support; an operating lever handle frictionally bearing on the bolt and adapted to move the same out of latching position and into resting position on the support; a spring pressing the bolt into latching position.

6. In combination with a keeper therefor, a door latch comprising: a support; a bearing member; a bolt mounted on said member slidably into and out of latching engagement with the keeper and rockably, about an axis disposed parallelly with the direction of said reciprocating movement, into and out of resting position on the support; a lever having a handle arm and an arm frictionally bearing on the bolt, and adapted to move the same out of latching position and into resting position on the support; a spring pressing the bolt into latching position.

7. In combination with a keeper therefor, a door latch comprising: a casing having an opening therethrough; a bolt in the casing movable into and out of latching engagement with said keeper and having a portion extending through the casing said portion being provided with a keeper outside the casing in the latching position of the bolt; a lock adapted to engage in the last-mentioned keeper to lock the bolt in latching position.

8. In combination with a keeper therefor, a door latch comprising: a support; a bolt having a reciprocating movement into and out of latching engagement with the keeper and a rocking movement, about an axis disposed parallelly with the direction of said reciprocating movement, into and out of resting position on the support; an operating handle adapted to move the bolt out of latching position; a spring pressing the bolt into resting position on the support.

9. In combination with a keeper therefor, a door latch comprising: a support; a bearing member; a bolt mounted on said member slidably into and out of latching engagement with the keeper and rockably into and out of resting position on the support; an operating lever adapted to slide the bolt out of latching position; a helical spring under longitudinal tension to press the bolt into latching position and under torsional tension to press the bolt into resting position on the support.

10. In combination with a keeper therefor, a door latch comprising: a support; a bolt having a reciprocating movement into and out of latching engagement with the keeper and a rocking movement, about an axis disposed parallelly with the direction of said reciprocating movement, into and out of resting position on the support.

11. In combination with a keeper therefor, a door latch comprising: a support; a

bolt having a reciprocating movement into and out of latching engagement with the keeper and a rocking movement, about an axis disposed parallelly with the direction of said reciprocating movement, into and out of resting position on the support; an operating lever handle bearing on the bolt and adapted to move the same out of latching position and into resting position on the support.

In testimony whereof I have hereunto set my hand at Grand Rapids, Michigan, this 4th day of November, 1924.

ANDREW EKMAN.